



KERALA STATE CIVIL SERVICE ACADEMY



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TIANJIN DECLARATION

The Shanghai Cooperation Organisation (SCO) leaders, through the Tianjin Declaration, unanimously condemned terrorism, referencing attacks in Pahalgam

Key Points from the Declaration

- Opposed unilateral sanctions and supported fairness in global governance.
- Condemned targeting civilians in conflicts, mentioning Gaza and Afghanistan.
- Supported political stability in Afghanistan and endorsed China's Belt and Road Initiative.

Summit Highlights

- PM Modi and President Putin discussed peace, stability, and cooperation, including Ukraine.
- Xi Jinping stressed fairness in global leadership and warned against Cold War mentality.
- Laos was upgraded to SCO partner status; members backed humanitarian aid and economic development.

Shanghai Cooperation Organisation (SCO)

- **Formation:** Established in 2001 in Shanghai by China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan (building on the earlier "Shanghai Five" group).
- **Membership:** Currently 9 members – China, Russia, India, Pakistan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, and Iran (joined in 2023). Several observer states and dialogue partners also participate.
- **Headquarters:** Beijing, China.
- **Official Languages:** Chinese and Russian.

Objectives

- Promote regional peace, security, and stability.
- Combat terrorism, separatism, and extremism (the "three evils").
- Enhance economic, cultural, and connectivity cooperation.
- Encourage multipolarity and fairness in global governance.

Key Features

- **Regional Anti-Terrorist Structure (RATS):** Based in Tashkent, focuses on intelligence-sharing and counter-terrorism.
- **Annual Summits & Declarations:** Used to align on political, security, and economic issues.
- **Belt and Road Initiative (BRI):** Endorsed by SCO, though India remains opposed.
- Expanding outreach with **observer states, dialogue partners, and partner status**(e.g., Belarus in process of joining, Laos as partner).



India at SCO Trade Ministers' Meeting, Vladivostok

Key Highlights

- Reaffirmed commitment to a WTO-centered, open, fair, and inclusive multilateral trading system.
- Called for a development-centered trade agenda, including:
 - Permanent solution on public stockholding for food security.
 - Effective Special and Differential Treatment for developing nations.
- Urged restoration of a two-tier WTO dispute settlement system.
- Emphasized need for transparent export measures, warning against misuse and artificial scarcity.
- Stressed export diversification, resilient supply chains, and MSME integration for shared prosperity.

Broader Priorities

- Showcased India's Digital Public Infrastructure (UPI, ONDC) and proposed SCO collaboration on digital economy and secure digitalization.
- Advocated climate action on the principle of Common but Differentiated Responsibilities, opposing trade-linked discrimination.
- Highlighted AVGC sector (Animation, Visual Effects, Gaming & Comics) as a driver of jobs, exports, and creative industries.

Significance

- Strengthens rule-based, fair, and inclusive trade through WTO.
- Enhances regional economic cooperation, connectivity, and sustainable growth within SCO.

World Trade Organization (WTO)

- Established: 1 January 1995 (replacing GATT, 1947).
- Headquarters: Geneva, Switzerland.
- Membership: 164 members (including India).

Objectives

- Promote free, fair, and predictable international trade.
- Provide a platform for trade negotiations and settlement of disputes.
- Ensure non-discrimination through Most Favoured Nation (MFN) and National Treatment principles.
- Support developing countries through Special and Differential Treatment (S&DT).

Core Functions

- Administers WTO Agreements (on goods, services, and intellectual property – TRIPS, GATS, AoA).
- Trade Dispute Settlement: Operates a two-tier system – Panel and Appellate Body.
- Monitoring and Transparency: Oversees trade policies of members through reviews.
- Capacity Building: Technical assistance and training for developing/least developed countries.

Current Issues

- Appellate Body Crisis: Non-functioning since 2019 due to U.S. opposition to judge appointments.
- Agriculture Negotiations: Dispute over food security, subsidies, and public stockholding.
- Digital Trade: Rules on e-commerce and data flow are contested.
- Developing Country Concerns: Need for fairer S&DT provisions.

Significance

- Provides a rule-based multilateral trading system, preventing unilateralism.
- Ensures predictability, transparency, and stability in global trade.
- Key platform for addressing global challenges like supply chain resilience, climate-linked trade issues, and digital economy.

100 YEARS OF THE SELF-RESPECT MOVEMENT IN TAMIL NADU

Origins and Description

- Began in 1925 as a movement against caste and gender hierarchy.
- Led by Periyar E.V. Ramasamy, who used the Tamil weekly *Kudi Arasu* to spread radical, non-Brahmin ideas.

Political Impact

- Periyar engaged with the Justice Party, advocating militant non-Brahminism to counter Congress's caste politics.
- Offered an alternative social reform agenda, challenging upper-caste dominance.

Radical Social Reforms

- Popularized self-respect marriages, promoted women's rights (remarriage, property), and expanded public debate.
- *Kudi Arasu* articulated radical positions on caste and gender, influencing reforms in Hindu society.

Justice Party's Role

- The South Indian Liberal Federation empowered non-Brahmins and widened political participation.
- However, non-elite non-Brahmins often remained marginalized.

Legacy and Recognition

- Fostered awareness and pride among non-Brahmin masses about their rights.
- Its legacy reshaped caste dynamics, gender politics, and social reform, retaining relevance in contemporary Tamil society.

E.V. Ramasamy (Periyar)

- **Born:** 17 September 1879, Erode, Tamil Nadu
- **Known as:** *Periyar* ("The Great One")

Role in Social Reform

- Founded the Self-Respect Movement (1925) to challenge caste hierarchy, Brahminical dominance, and gender inequality.
- Advocated rationalism, atheism, and social justice, rejecting religious orthodoxy and superstition.
- Strongly opposed untouchability, hereditary caste privileges, and dominance of upper castes in politics and society.

Political Engagement

- Initially associated with the Indian National Congress, but resigned due to differences over caste discrimination.
- Later allied with the Justice Party, pushing for non-Brahmin representation in politics and education.
- Played a major role in shaping Dravidian ideology, which later influenced parties like DMK and AIADMK.

Key Reforms

- Promoted Self-Respect Marriages (without Brahmin priests, based on equality).
- Championed women's rights: widow remarriage, right to property, education, and opposition to child marriage.
- Used journalism (*Kudi Arasu* weekly) and public debates to spread rationalist and egalitarian ideas.

Legacy

- Revered as the "Father of the Dravidian Movement."
- Left a lasting impact on Tamil society, politics, and social justice discourse.
- His ideas continue to shape debates on caste, rationalism, and social reform in South India.



SAMHiTA

External Affairs Minister Dr. S. Jaishankar inaugurated the SAMHiTA Conference on South Asia's Manuscript Traditions and Mathematical Contributions

Objectives

- Digital Archive: Digitize and unify manuscripts scattered across global collections for wider access.
- Mathematical Heritage: Highlight South Asia's contributions to mathematics and related sciences.
- Global Collaboration: Partner with international institutions for preservation and knowledge exchange.

SAMHiTA Conference

- ❖ External Affairs Minister Dr. S Jaishankar inaugurated the SAMHiTA Conference on Manuscript Traditions and Mathematical Contributions of South Asia in New Delhi.
- ❖ **Full name of SAMHiTA:** South Asian Manuscript Histories and Textual Archive (SAMHiTA)
- ❖ Objectives:
 - To preserve and promote the manuscript traditions of India and South Asia.
 - To create a database of Indian and South Asian manuscripts preserved in libraries, archives and institutions in different countries.
 - To create a digital repository of these manuscripts so that researchers and scholars can easily access them.



Key Highlights

- Dr. Jaishankar emphasized self-reliance in intellectual leadership and showcasing India's civilizational and mathematical heritage.
- The initiative strengthens cultural diplomacy, enhances research infrastructure, and deepens India's role in global knowledge networks.

South Asia's Manuscript Traditions and Mathematical Contributions

Manuscript Traditions in South Asia

- Diversity of Scripts and Languages: South Asia has one of the richest manuscript traditions in the world, spanning Sanskrit, Pali, Prakrit, Tamil, Persian, Arabic, and Tibetan among others.

These manuscripts cover religion, philosophy, medicine, astronomy, mathematics, grammar, and arts.

- Materials and Mediums: Manuscripts were traditionally inscribed on palm leaves, birch bark, parchment, and handmade paper, often preserved in temples, monasteries, mathas, and royal libraries.
- Centers of Manuscript Culture:
 - Nalanda and Vikramshila Universities: Major repositories of Buddhist and scientific manuscripts.
 - Kerala and Tamil Nadu: Palm-leaf manuscripts in Ayurveda, astronomy, and mathematics.
 - Kashmir: Known for Shaiva and Buddhist manuscripts on birch bark.
 - Persianate Traditions: Mughal patronage encouraged preservation of texts in astronomy, medicine, and mathematics.
- Transmission and Global Spread: Manuscripts were carried along trade routes and through cultural exchanges to Central Asia, the Middle East, and Europe, influencing global knowledge systems.

Mathematical Contributions of South Asia

South Asia played a foundational role in global mathematical development:

- Decimal Place Value System & Zero: The concept of zero as a number and the place value system emerged in India (e.g., Brahmagupta, 7th century CE). This became the foundation of modern arithmetic.
- Algebra and Arithmetic:
 - Aryabhata (5th century CE): Introduced place value notation, trigonometric functions (sine, cosine).
 - Brahmagupta (7th century CE): Systematic rules for zero and negative numbers; quadratic equations.

- Bhaskara II (12th century CE): Solutions to indeterminate equations; contributions to calculus-like concepts.
- Geometry and Trigonometry:
 - Sulbasutras (c. 800–500 BCE) contain rules for altar construction, approximations of $\sqrt{2}$, and Pythagorean triples.
 - Indian trigonometric methods later influenced Islamic and European mathematics.
- Astronomical Mathematics: Mathematics was closely tied to astronomy for calendar-making and planetary calculations. Works like Surya Siddhanta combined mathematics with cosmology.
- Transmission to the World: Indian numerals were transmitted via the Arabs (“Arabic numerals”) to Europe, revolutionizing commerce and science. Indian trigonometry and algebra shaped Islamic Golden Age mathematics.

MALACCA STRAITS

Singapore has officially backed India’s interest in joining joint patrols of the Malacca Straits, marking a new phase in bilateral maritime security cooperation and regional collaboration.

Key Details

- In September 2025, Prime Ministers Narendra Modi and Lawrence Wong discussed India’s formal role in the Malacca Straits Patrol (MSP), currently involving Indonesia, Malaysia, Singapore, and Thailand.
- Singapore views India’s participation as strengthening regional security, technology pooling, and balancing major power influence in the Indo-Pacific.

Strategic Importance

- The Malacca Strait is a vital chokepoint: nearly 40–50% of global trade and 70% of Asia’s oil imports pass through it.
- For India, about 60% of sea-based trade and almost all LNG imports transit this route.
- India’s Andaman & Nicobar Islands, just 600 km away, provide operational leverage for the Indian Navy.



Impact on Regional Security

- India’s entry will boost anti-piracy, anti-trafficking, and intelligence operations, drawing on its naval experience in the Gulf of Aden.
- It strengthens India’s Act East policy, deepens ASEAN-led security structures, and contributes to Indo-Pacific balance.

Technological Cooperation

- The partnership will advance collaboration in AI, quantum computing, unmanned vessels, and surveillance technologies.
- Joint ventures may include autonomous patrol craft and quantum-secure communications for maritime safety.

Malacca Strait

- Geography: The Malacca Strait is a narrow stretch of water between the Malay Peninsula (Malaysia & Singapore) and the Indonesian island of Sumatra. It connects the Andaman Sea (Indian Ocean) with the South China Sea (Pacific Ocean).

- Its narrowest point, the Phillip Channel near Singapore, is only about 2.7 km wide, making it one of the world's most significant maritime chokepoints.
- Strategic Importance:
 - Handles about 40–50% of global trade and nearly 70% of Asia's oil imports.
 - Vital for energy flows from the Middle East and Africa to East Asia.
 - For India, around 60% of its maritime trade and almost all LNG imports pass through this corridor.
- Security Concerns:
 - Vulnerable to piracy, trafficking, smuggling, and potential blockades.
 - The presence of multiple stakeholders (Indonesia, Malaysia, Singapore, and Thailand) makes cooperative security essential.
- India's Significance:
 - India's Andaman & Nicobar Islands lie just 600 km away, giving India strategic proximity.
 - Participation in the Malacca Straits Patrol (MSP) enhances India's Act East Policy and Indo-Pacific strategy.
- Global Relevance:
 Securing the Malacca Strait is critical for global energy security, freedom of navigation, and Indo-Pacific stability.

- Detailed scrutiny of evidence was deferred to the trial stage.

Charges and Prosecution

- Accused charged with premeditated conspiracy leading to deaths and property damage.
- Section 15 of UAPA covers acts threatening India's unity, integrity, or security.
- Witnesses confirmed planning and instigation through meetings and social media groups.

Judicial Reasoning

- Bail in UAPA cases is restrictive; granted only if accusations are not prima facie true.
- Bail orders for co-accused are not precedents for others, as each case is specific.

Liberty Concerns

- Accused have spent over five years in jail without trial starting.
- SC guidance allows bail if trial is unreasonably delayed, but depends on case facts.

Significance

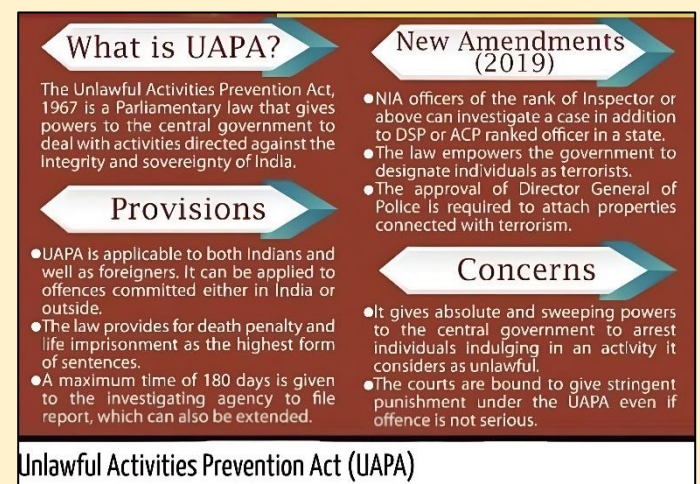
- Highlights UAPA's stringent bail provisions and the judiciary's cautious approach in terror-related cases.

UNLAWFUL ACTIVITIES (PREVENTION) ACT (UAPA)

The Delhi High Court denied bail to several accused under UAPA in the 2020 Delhi riots case, citing that the accused had orchestrated a premeditated conspiracy and that there was enough evidence to support the charges at the bail stage.

Reasons for Bail Denial

- Court found prima facie evidence supporting charges under UAPA, which sets a low threshold for denying bail.
- Evidence included WhatsApp chats, secret meetings, and witness testimony indicating planned violence.



Unlawful Activities (Prevention) Act (UAPA)

Background

- Enacted in 1967 to curb unlawful activities threatening India's sovereignty and integrity.

- Strengthened multiple times, especially post-2004, 2008 (26/11 Mumbai attacks), and 2019 amendments.
- Considered India's primary **anti-terror law**.

Key Provisions

1. **Definition of Terrorist Act (Section 15):**
 - Includes acts intended to threaten India's unity, integrity, security, or strike terror in people.
2. **Terrorist Organisation (Section 35 & 36):**
 - Central Government can **designate organisations** as "terrorist organisations" and ban them.
3. **Individual Terrorist Tag (2019 Amendment):**
 - Government can designate **individuals** as terrorists (without judicial oversight).
4. **Extended Detention & Bail Restrictions (Section 43D(5)):**
 - Allows detention up to **180 days** without filing a charge sheet.
 - Bail can be denied if court believes accusations are **prima facie true**, setting a low threshold.
5. **National Investigation Agency (NIA) Powers:**
 - Empowered to investigate UAPA cases across India without state consent.
6. **Search, Seizure & Property Attachment:**
 - Government can seize property suspected to be linked with terrorism.

Contentious Issues

- **Overbreadth & Vagueness:** Broad definitions risk misuse against activists, journalists, and dissenters.
- **Bail Provisions:** Section 43D(5) makes bail extremely difficult, leading to long pre-trial incarceration.
- **Designation of Individuals:** Lack of judicial checks; government decision can stigmatize without trial.

- **Federalism Concerns:** NIA powers dilute state police jurisdiction.
- **Civil Liberties:** Extended detention and restricted bail seen as undermining personal liberty under Article 21.

Judicial Stance

- Courts stress that UAPA must balance national security with constitutional rights.
- SC in *Union of India v. K.A. Najeer* (2021) held that **prolonged incarceration and trial delays can justify bail** despite Section 43D(5).

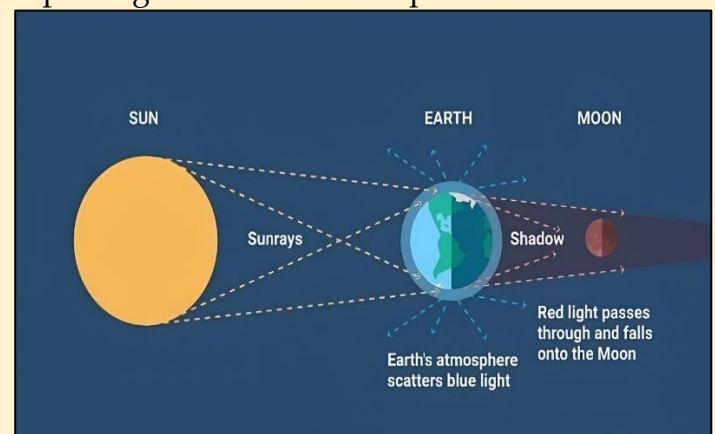
BLOOD MOON

On the night of September 7-8, 2025, a spectacular total lunar eclipse, popularly called a Blood Moon, was visible across Asia.

The eclipse lasted about 82 minutes, making it one of the longest of the decade, with totality from 11:01 PM to 12:23 AM IST in India.

During the event, Earth came between the Sun and the Moon, casting a shadow that turned the Moon a striking red-orange due to Rayleigh scattering, which filters out blue light and allows red light to reach the Moon's surface.

The event attracted skywatchers worldwide, with stunning images and live streams capturing the rare celestial spectacle.



Blood Moon (Total Lunar Eclipse)

- A Blood Moon occurs during a total lunar eclipse, when the Earth comes directly between the Sun and the Moon, blocking sunlight from reaching the Moon.

- Instead of going completely dark, the Moon appears red or reddish-orange.
- This happens because of Rayleigh scattering: Earth's atmosphere scatters shorter blue wavelengths of sunlight while the longer red wavelengths bend around Earth and illuminate the Moon.
- The intensity of the red color depends on the amount of dust, pollution, or volcanic particles in Earth's atmosphere.
- Unlike a solar eclipse, a lunar eclipse (and hence a Blood Moon) is visible from anywhere on Earth where the Moon is above the horizon at the time.
- Blood Moons are rare but predictable astronomical events, often lasting longer than solar eclipses.

Partial Lunar Eclipse

- Occurs when only a part of the Moon enters Earth's umbra (central shadow).
- The rest of the Moon remains illuminated by direct sunlight.
- The Moon appears as if a dark "bite" has been taken out of it.
- More frequent than total lunar eclipses.

Total Lunar Eclipse

- Occurs when the entire Moon enters Earth's umbra.
- The Moon appears reddish-orange (Blood Moon) due to Rayleigh scattering and refraction of sunlight through Earth's atmosphere.
- Can last up to 1 hour or more, depending on Earth-Moon-Sun alignment.
- Less frequent compared to partial eclipses but more spectacular.

Key Difference:

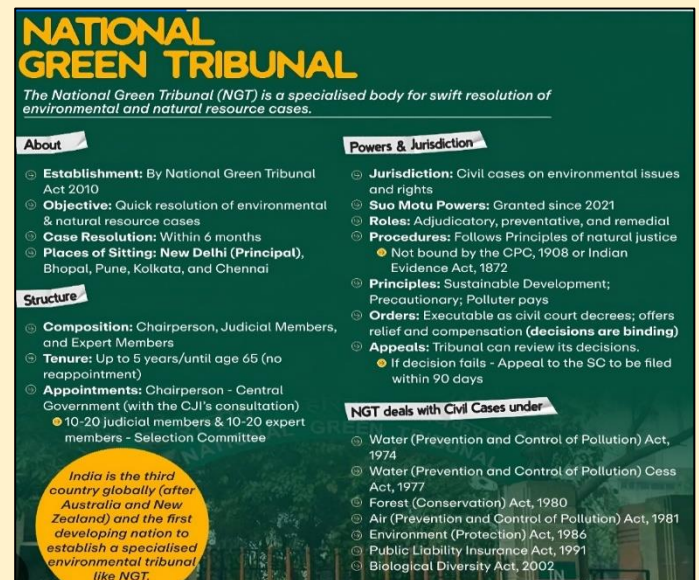
- Partial eclipse → only part of Moon darkens.
- Total eclipse → whole Moon darkens and turns red.

NATIONAL GREEN TRIBUNAL (NGT)

The National Green Tribunal (NGT) has directed the Ministry of Environment, Forests & Climate Change (MoEFCC) to review affidavits from Himachal Pradesh and Uttarakhand on declaring the Higher Himalayas as an eco-sensitive zone (ESZ).

Key Points

- **Aim:** Protect fragile Himalayan ecosystems from disasters and unsustainable development.
- **Recommended measures:** Restrict large construction projects, monitor glaciers and river flows, curb biodiversity threats, strengthen disaster response, and improve waste management.
- **Context:** Frequent floods, landslides, and glacial lake outburst floods are worsening with climate change.
- **Next steps:** States have sought more time citing ongoing crises; NGT expects detailed responses, with a hearing due in late November 2025.



NATIONAL GREEN TRIBUNAL

The National Green Tribunal (NGT) is a specialised body for swift resolution of environmental and natural resource cases.

About	Powers & Jurisdiction
- Establishment: By National Green Tribunal Act 2010 - Objective: Quick resolution of environmental & natural resource cases - Case Resolution: Within 6 months - Places of Sitting: New Delhi (Principal), Bhopal, Pune, Kolkata, and Chennai	- Jurisdiction: Civil cases on environmental issues and rights - Suo Motu Powers: Granted since 2021 - Roles: Adjudicatory, preventative, and remedial - Procedures: Follows Principles of natural justice - Not bound by the CPC, 1908 or Indian Evidence Act, 1872 - Principles: Sustainable Development; Precautionary; Polluter pays - Orders: Executable as civil court decrees; offers relief and compensation (decisions are binding) - Appeals: Tribunal can review its decisions. - If decision fails - Appeal to the SC to be filed within 90 days

Structure

- Composition: Chairperson, Judicial Members, and Expert Members
- Tenure: Up to 5 years/until age 65 (no reappointment)
- Appointments: Chairperson - Central Government (with the CJI's consultation)
 - 10-20 judicial members & 10-20 expert members - Selection Committee

NGT deals with Civil Cases under

- Water (Prevention and Control of Pollution) Act, 1974
- Water (Prevention and Control of Pollution) Cess Act, 1977
- Forest (Conservation) Act, 1980
- Air (Prevention and Control of Pollution) Act, 1981
- Environment (Protection) Act, 1986
- Public Liability Insurance Act, 1991
- Biological Diversity Act, 2002

India is the third country globally (after Australia and New Zealand) and the first developing nation to establish a specialised environmental tribunal like NGT.

National Green Tribunal (NGT)

- **Establishment:** Formed in 2010 under the *National Green Tribunal Act, 2010*.
- **Objective:** Provides speedy and specialized adjudication of cases relating to environmental protection, forest conservation, and enforcement of legal rights connected to the environment.

Key Features

1. Jurisdiction:

- Handles civil cases under laws such as the Environment Protection Act (1986), Forest Conservation Act (1980), Air Act (1981), Water Act (1974), Biological Diversity Act (2002), etc.
- Excludes Wildlife (Protection) Act, 1972 and Indian Forest Act, 1927.

2. Composition:

- Chairperson (a retired Supreme Court judge or Chief Justice of a High Court).
- Judicial Members and Expert Members (environmental experts/scientists).

3. Powers:

- Same powers as a Civil Court under CPC.
- Can grant relief, compensation, and order restoration of damaged ecology.

4. Principles Applied:

- **Polluter Pays Principle.**
- **Precautionary Principle.**
- **Sustainable Development.**

5. Speedy Disposal:

- Mandated to dispose of cases within **6 months** of filing.

6. Benches:

- Principal Bench: New Delhi.
- Regional Benches: Bhopal, Pune, Kolkata, and Chennai.

Significance

- Provides **accessible and specialized justice** in environmental matters.
- Acts as a **check on unsustainable development** projects.
- Ensures accountability of both State and private entities in ecological protection.

Challenges

- Limited jurisdiction (cannot take up wildlife/forest rights cases directly).
- Enforcement of its orders sometimes weak.
- Burden of increasing environmental disputes vs limited benches.

RIGHTS OF PERSONS WITH DISABILITIES (RPWD) ACT, 2016.

The Government of India has issued revised guidelines under the **Rights of Persons with Disabilities (RPWD) Act, 2016**.

The guidelines provide a framework for assessing disability in individuals with two copies of the sickle cell gene, or with sickle cell plus beta thalassaemia/Hb D.

However, the **exclusion of sickle cell disease (SCD) from the 4% reservation quota** has triggered criticism and demands for reform.

What is Sickle Cell Disease (SCD)?

- SCD is a genetic blood disorder caused by an abnormal form of haemoglobin (HbS).
- Red blood cells, instead of being round and flexible, take the shape of a sickle (crescent).
- This makes them sticky and fragile, leading to:
- Anaemia: Shortage of healthy red blood cells.
- Severe pain episodes (crises): Due to blocked blood flow.
- Organ damage: Heart, kidney, spleen, and brain may be affected.
- Frequent hospitalisation from childhood.
- Beyond health issues, stigma and discrimination deepen the barriers to education, employment, and social mobility.

Salient features of Rights of Persons with Disabilities (RPwD) Act, 2016

- The **Rights of Persons with Disabilities (RPwD) Act, 2016** was passed to safeguard the dignity and equality of persons with disabilities and to ensure they are protected from any form of discrimination.
- The 2016 Act expanded the scope to **21 types of disabilities**. These include conditions such as **autism spectrum disorder, cerebral palsy, muscular dystrophy, specific learning disabilities, and survivors of acid attacks**, among others.

Provisions in RPWD Act, 2016: Ensuring Barrier Free Learning



-  Barrier free access for all children with disabilities
-  Assistive devices, appropriate technology-based tools as well as adequate and language-appropriate teaching-learning materials
-  Children with disabilities can choose between regular or special schooling & Home-based education
 - An audit of home-based education to be initiated and guidelines to be developed
-  Resource centres & special educators to support the rehabilitation & educational needs of learners with severe or multiple disabilities

Benefits

- Discrimination in recruitment, promotion, training, or pay on the basis of disability is not allowed.
- Persons with disabilities must be **treated equally** in the workplace.
- At least **4% of vacancies in government jobs** are reserved for candidates with benchmark disabilities (40% or more impairment).
- **Employees who acquire a disability during service** cannot be removed from their job.
- Such employees can be shifted to another suitable post without any cut in pay or benefits.
- Employers must provide necessary adjustments or assistive devices to help employees perform their duties.
- Workplaces should have accessible infrastructure like ramps, adapted furniture, supportive technology, and suitable toilets.
- Policies must be in place to prevent harassment, bullying, or discrimination related to disability.
- Persons with disabilities should have equal access to training, reskilling, and promotional opportunities.

RPWD Act, 2016 and Benchmark disability

- The RPWD Act widened the meaning of disability and gave special rights to those with **benchmark disabilities**.
- A **benchmark disability** means a person has at least **40% or more**

impairment, as per Section 2(r) of the Act.

- People with benchmark disabilities can get **free school education, reservations in higher studies, benefits under government schemes, and job reservations**.
- The 40% rule leaves out many who still suffer as the percentage system is not uniform. Different doctors or medical boards may give different results for the same person.
- Because of this, many disabling conditions that affect daily life do not get officially recognised.
- **Sickle Cell Disease (SCD)** may not always look like a disability but causes severe problems.
- People with SCD face repeated episodes of **pain, weakness, anaemia, organ damage, and frequent hospital visits**, often from childhood.
- These health issues disturb schooling, reduce job chances, and shorten life expectancy.
- The problem is worse for **Adivasi and Dalit communities**, who also face **stigma and discrimination** along with the disease.

The continual reliance on biomedical scoring and exclusion of people with SCD from full protections undermines the very purpose of recognising the condition under the Act.

Issue of burden of proof

- In India, many government schemes give special benefits to people who have an official disability certificate.
- Some states like Odisha and Himachal Pradesh provide higher pension amounts for people with severe disabilities.
- Under **Section 80U of the Income Tax Act, 1961**, a person with a certified disability can get a tax deduction of ₹75,000, which goes up to ₹1.25 lakh in cases of severe disability.
- To claim these benefits, a person must get a **disability certificate**, issued by a medical authority as per Section 58 of the RPWD Act.

- The certificate is issued after evaluation by a medical board, usually led by the Chief Medical Officer.
- Confirmatory test reports must come from a government-approved or standard lab.
- Disability beyond the basic 40% benchmark is calculated through a **scoring system** that gives points for issues like pain, frequent blood transfusions, or neurological problems.
- This scoring system often ignores the **real impact of the disease**, especially when symptoms are invisible or occur only sometimes.
- As a result, people with serious challenges may not qualify for a higher score.
- The certification process itself is difficult for marginalised groups. **Adivasi and Dalit patients in rural or remote areas** face big hurdles in arranging medical tests or travelling long distances to district hospitals for evaluation.

Way forward

- **Extend job reservations** under the 4% quota to individuals with SCD and related blood disorders.
- **Reform certification** process, move beyond biomedical scoring to consider fluctuating, invisible, and social impacts.
- **Introduce decentralise certification** ensure accessibility in rural/tribal areas with mobile medical boards.
- **Adopt rights-based approach**, treat disability as a lived experience shaped by health, social exclusion, and structural barriers.
- Combat stigma within healthcare, education, and workplaces by increasing awareness.

The RPWD Act promised inclusion and dignity but continues to rely on narrow biomedical frameworks. Unless sickle cell disease is recognised as a genuine, lifelong disability with real entitlements and protections, India risks reducing inclusion to mere tokenism.

IMMIGRATION AND FOREIGNERS BILL, 2025

The Immigration and Foreigners Bill, 2025 overhauls India's regime for regulating the entry, stay, and exit of foreign nationals by consolidating four older laws into one.

Key Highlights

- **Consolidation:** Merges the Passport (Entry into India) Act, 1920; Registration of Foreigners Act, 1939; Foreigners Act, 1946; and Immigration (Carriers' Liability) Act, 2000.
- **Unified System:** Introduces a centralized, digital framework for registration, permits, reporting, and data management.
- **Authority:** Immigration officers get final authority over entry, exit, and admissibility, with national security grounds overriding.

Provisions

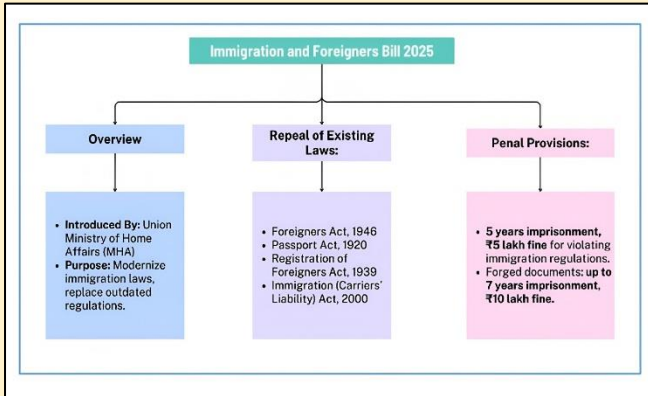
- **Registration:** Mandatory for foreigners at designated posts; district police and regional officers empowered.
- **Accommodation Reporting:** Hotels and similar establishments must submit records of foreign guests.
- **Digital Permits:** Required for movement into restricted/prohibited areas.

Exemptions

- **Diplomats,** official passport holders, Nepal and Bhutan citizens (except via third countries) exempt.
- **Refugees:** Sri Lankan Tamils (pre-2015) regularized; Tibetans and other registered refugees protected by special orders.

Enforcement

- **Digital Infrastructure:** Online portals and mobile apps for monitoring.
- **Graduated Penalties:** Differential fines based on seriousness (e.g., minor overstay penalties).
- **Humanitarian Exemptions:** Foreign military or events allowed by notification.



• Special Note:

- Enemy aliens may have these rights further restricted during emergencies.
- Foreigners are bound by laws relating to entry, stay, and exit under statutes like the Foreigners Act, 1946 and the new Immigration and Foreigners Bill, 2025.

Fundamental Rights for Foreigners in India

• General Principle:

Fundamental Rights in Part III of the Constitution are available to both citizens and foreigners, except where expressly restricted to citizens only.

• Rights Available to Foreigners:

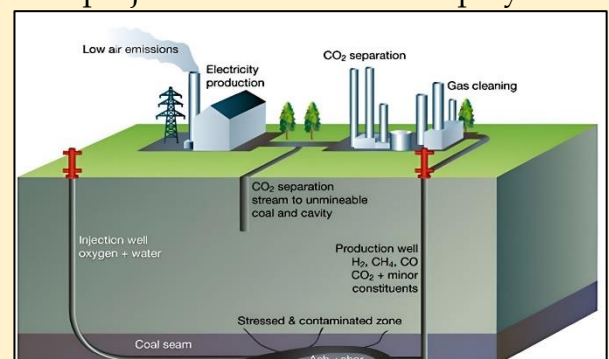
- **Article 14:** Right to equality before law and equal protection of laws.
- **Article 20:** Protection in respect of conviction for offences.
- **Article 21:** Right to life and personal liberty.
- **Article 22:** Protection in cases of arrest and detention (with certain limits).
- **Article 23 & 24:** Prohibition of trafficking, forced labour, and child labour.
- **Article 25–28:** Freedom of religion (subject to public order, morality, health).
- **Article 32:** Right to constitutional remedies for enforcement of rights.

• Rights Not Available to Foreigners (Citizens Only):

- **Article 15 & 16:** Prohibition of discrimination and equality of opportunity in public employment.
- **Article 19:** Six freedoms (speech, movement, residence, profession, etc.).
- **Article 29 & 30:** Cultural and educational rights of minorities.

NITI AAYOG WORKSHOP ON COAL GASIFICATION

- **Objective:** Workshop in New Delhi on “Coal Gasification Technology for Indian High Ash Content Coal” aimed at advancing the National Coal Gasification Mission, Make in India, and Atmanirbhar Bharat.
- **Focus:** Addressing challenges of gasifying Indian coal with 25–45% ash content; experts highlighted circulating fluidized bed gasification as most suitable.
- **Policy Support:** Ministry of Coal announced ₹8,500 crore Viability Gap Funding for public and private projects, with Letters of Award for selected firms.
- **Indigenous Technology:** IIT Delhi, BHEL, CIMFR, and others showcased successful pilot projects proving feasibility of gasification using domestic tech.
- **Strategic Significance:** Coal gasification positioned as vital for energy security, cleaner coal utilization, and reducing import dependence; next steps include CCUS integration and scaling pilot projects for commercial deployment.



Coal Gasification

- **Definition:** Coal gasification is a process that converts coal into synthesis gas (syngas), a mixture of carbon monoxide (CO), hydrogen (H₂), carbon dioxide (CO₂), and methane (CH₄).
- **Process:** Coal reacts with controlled amounts of oxygen, steam, or air at high temperature and pressure, without complete combustion.
- **Uses of Syngas:**
 - Power generation (Integrated Gasification Combined Cycle – IGCC)
 - Production of methanol, ammonia, urea, and synthetic natural gas (SNG)
 - Hydrogen production and as feedstock for petrochemicals
- **Advantages:**
 - Cleaner utilization of coal with reduced SO_x, NO_x, and particulate emissions compared to direct burning
 - Enables Carbon Capture, Utilization, and Storage (CCUS)
 - Reduces dependence on imported oil and natural gas.
- **Challenges in India:**
 - High ash content in Indian coal (25–45%) makes gasification technologically demanding
 - High costs of setup and operation
 - Need for robust infrastructure and indigenous R&D.
- **Policy Context:**
 - India aims for 100 MT of coal gasification by 2030
 - National Coal Gasification Mission supports projects through viability gap funding and public-private partnerships

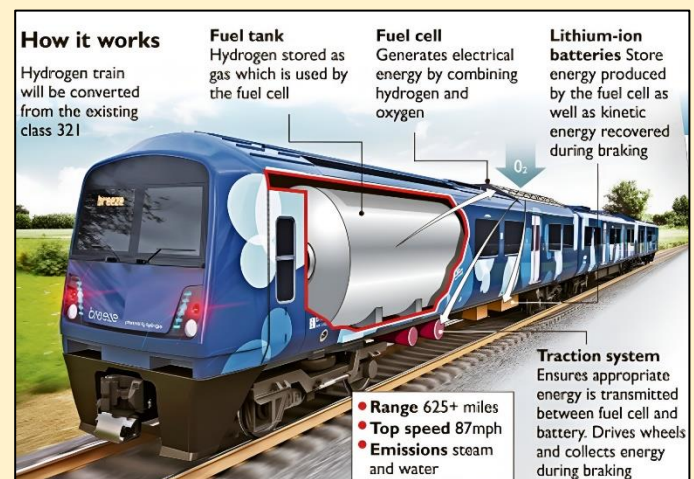
HYDROGEN TRAIN

Indian Railways has recently tested its first hydrogen-powered coach, marking a significant step towards the deployment of **Hydrogen Fuel Cell (HFC) technology** in India's vast railway network.

Hydrogen-powered trains, or **hyd rail**, are emerging as a promising zero-emission alternative to diesel-electric locomotives.

What are Hydrogen Trains?

- Hydrogen trains are electric trains with an onboard power source, unlike conventional electric trains that are powered via overhead wires.
- They use HFC (Hydrogen Fuel Cell) technology, which generates energy through the electrochemical reaction of compressed hydrogen with atmospheric oxygen, emitting water vapour as the sole byproduct making it a zero-emission mechanism.
- The electricity produced by the fuel cell is stored in batteries, which provide additional power during acceleration and climbing inclines.
- Hydrogen trains also employ regenerative braking technology, which captures the kinetic energy (motion energy) generated during braking and converts it into electricity to recharge onboard batteries.



Hydrogen Fuel Cell vs Electric Trains

- Hydrogen trains work by first using electricity to produce hydrogen (through electrolysis), and then converting that hydrogen back into electricity inside the train to run it. Because of this double conversion process, some energy is lost along the way.
- Electric trains, on the other hand, draw electricity directly from overhead wires. This makes them more energy-efficient, especially when the power comes from renewable sources like solar or wind.
- This means that, over their full life cycle, electric trains are generally more efficient than hydrogen trains.

Green Hydrogen vs Grey Hydrogen

- Green Hydrogen: Made using renewable energy (like solar or wind) to split water into hydrogen and oxygen. This process does not release harmful gases, so the trains powered by it can truly be called zero-emission.
- Grey Hydrogen: Produced from fossil fuels (like coal or natural gas). This process releases carbon dioxide (CO₂), which reduces the environmental benefits of hydrogen trains.
- For hydrogen trains to actually fight climate change, India needs to shift from grey hydrogen to green hydrogen at a large scale. Only then can hydrail become a genuinely clean and climate-friendly option.

Advantages of Hydrail

- Eliminates smoke emissions from fuel combustion, reducing noise and air pollution.
- Operates on both electrified and non-electrified routes, ensuring greater flexibility.
- Particularly useful for routes where overhead electrification is unfeasible or prone to disruption.
- Can be refuelled in 20-25 minutes, faster than battery-electric train recharging.

- Supports India's net-zero target by 2070; Indian Railways already reduced fuel use by 136 crore litres (2018-19 to 2023-24).
- Though initial investments are high, cost-effective on non-electrified routes by avoiding overhead electrification costs.
- Reduces dependence on imported diesel, strengthening energy security and improving balance of payments.

Challenges

- Hydrail has a substantially high initial cost of production compared to both electric and diesel trains.
- It requires the development of an extensive system for hydrogen production, storage and distribution – an infrastructure that is largely absent in India today.
- The massive refueling stations and machinery needed to support the substantial fleet of hydrogen trains present another logistical and financial challenge.
- The highly flammable nature of hydrogen requires adherence to strict safety standards from production to storage and refuelling, necessitating further investment in safety infrastructure and training for railway personnel.
- Currently, most hydrogen in India is derived from fossil fuels → undermines decarbonisation goals.

Way forward

- Leverage India's growing renewable energy capacity to scale up green hydrogen production and reduce costs.
- Develop a decentralised hydrogen infrastructure focusing on storage and refuelling, inspired by the Hydrogen Highways model under NGHM.
- Invest heavily in research and development to improve hydrogen fuel cell efficiency, safety standards, and cost competitiveness.
- Ensure long-term policy support with clear roadmaps, incentives, and public-private partnerships to sustain momentum.

- Strategically deploy hydrogen trains on non-electrified, remote, and hilly routes where they have maximum advantage.

Hydrogen trains mark a significant milestone in India's pursuit of a **sustainable and decarbonised transport system**. With the right mix of renewable energy integration, infrastructure development, and supportive policies, India can position itself as a **global leader in green hydrogen innovation**.

VIKRAM 3201

Prime Minister Narendra Modi received the first Made in India Vikram 32-bit chip at Semicon India 2025, marking a milestone in the country's semiconductor industry.

- The Vikram 32-bit Processor, an upgraded version of the earlier 16-bit VIKRAM1601 microprocessor, was developed by ISRO's Vikram Sarabhai Space Centre and the Semiconductor Laboratory, Chandigarh. It has been used in ISRO's launch vehicles since 2009 for space flight and avionics.
- Union Minister Ashwini Vaishnaw presented the chip to PM Modi, along with 31 prototype chips developed by IITs and NITs.



- India currently has five semiconductor units under construction, one pilot line completed, and two more units set to begin production soon.
- This achievement strengthens India's position as an emerging semiconductor hub, boosting global confidence in its technology sector.

The Vikram 32-bit chip is India's first indigenously developed 32-bit microprocessor for space applications. It is an advanced version of the earlier VIKRAM1601 (16-bit) processor and has been developed by

ISRO's Vikram Sarabhai Space Centre in collaboration with the Semiconductor Laboratory, Chandigarh.

The chip is specifically designed for space flight and avionics systems in ISRO's launch vehicles and has been in operational use since 2009.

Product Description	Project
Vikram 3201 & 2mB SRAM	PSLV-CA C60
Vikram 1601 PE01	GSLV F-14/INSAT-3DS
ADC	Aditya L1 Mission
Vikram 1601 PE01	PSLV C57 Vehicle for Aditya L1 Mission
CMOS Camera Configurator	Lander Module of Chandrayaan 3 Mission
Vikram 1601 PE01	LVM3 M4 Vehicle for Chandrayaan 3 Mission

Its development marks a major step in India's semiconductor self-reliance, showcasing the country's ability to design and manufacture high-end processors for critical sectors like space technology.

The presentation of this chip at Semicon India 2025 highlights India's growing semiconductor ecosystem and its strategic push to become a global manufacturing hub.

BLUE DRAGONS

Several beaches in Spain were closed after the arrival of blue dragons (Glaucus atlanticus)

Several beaches in Spain were closed after the arrival of blue dragons (Glaucus atlanticus), small but venomous sea slugs capable of delivering extremely painful stings.

These creatures float upside down on the ocean surface, feeding on venomous jellyfish and incorporating their toxins for defense. Rarely seen in the Mediterranean, their sudden presence surprised scientists and locals. Stings can cause pain, swelling, nausea, and vomiting, though not usually fatal. Their appearance is linked to shifting water currents and marine anomalies, possibly driven by climate change.



Blue Dragon (*Glaucus atlanticus*)

- A small but strikingly blue sea slug (nudibranch) found in warm ocean waters.
- Floats upside down on the water surface using a gas-filled sac in its stomach.
- Feeds mainly on venomous organisms like Portuguese man o' war and jellyfish, storing their stinging cells (nematocysts) in its own tissues.
- This ability makes its sting extremely painful, causing swelling, nausea, and vomiting, though not usually fatal.
- Rarely seen in the Mediterranean; presence there is linked to shifting water currents and climate change.
- Considered an indicator of marine ecological anomalies.

RAMON MAGSAYSAY AWARD

Educate Girls, an Indian non-profit dedicated to enrolling unprivileged and out-of-school girls, has won the 2025 Ramon Magsaysay Award.

Founded in Rajasthan, the organization works in rural and remote areas to address gender injustice in education, ensuring girls remain in school until they secure credentials for higher studies or employment.

This is the first time an Indian organization has received the award for advancing girls' education, highlighting its community-driven model. The other 2025 winners are Shaahina Ali of the Maldives and Flaviano Antonio L. Villanueva of the Philippines.

Ramon Magsaysay Award

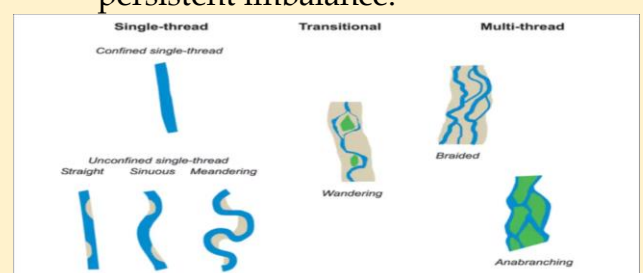
- **Established:** 1957, in memory of Ramon Magsaysay, the 7th President of the Philippines, known for integrity and leadership.
- **Presented by:** Ramon Magsaysay Award Foundation (RMAF), Manila, Philippines.
- **Objective:** To honor individuals or organizations in Asia who demonstrate selfless service, transformative leadership, and commitment to the common good.
- **Categories (originally):** Government Service, Public Service, Community Leadership, Journalism/Literature/Creative Communication Arts, Peace and International Understanding, Emergent Leadership.
- **Prestige:** Often called the "Nobel Prize of Asia."

MULTI THREADED RIVERS

Geographers at the University of California Santa Barbara have uncovered why some rivers split into multiple channels (multi-threaded) while others remain single-threaded.

Physical Mechanism

- **Single-thread rivers** maintain equilibrium between bank erosion and bar accretion—what erodes from one bank matches what is deposited on the opposite side, keeping the river stable.
- **Multi-threaded rivers** erode banks more quickly than they deposit material, resulting in channel widening and eventual splitting due to this persistent imbalance.



Broader Implications

- The distinction between river types affects flood risks, erosion hazards, and ecosystem services; understanding these patterns is increasingly important as extreme weather events become more common.
- Research showed many rivers historically shifted from multi-threaded to single-channel forms after human intervention, such as damming and sand mining, underscoring the impact people have on river morphology.

Technical Approach

- Scientists mapped river bank positions and water flows using thousands of satellite images, measuring erosion and gravel/sediment deposition to reveal cycles of instability behind channel splitting.
- This work highlights that river channel form is shaped not by static equilibrium but by repeated instability, informing future river management and flood prediction models.

Meandering

- **Definition:** Meanders are the sinuous, snake-like bends in a river channel that develop in its middle and lower courses due to lateral erosion and deposition.
- **Formation Process:**
 - On the outer bank, fast-flowing water causes erosion (river cliff).
 - On the inner bank, slower water leads to deposition (point bar).
 - This continuous process accentuates the bends.
- **Characteristics:**
 - Develops in rivers with gentle gradient, large volume of water, and fine sediments.
 - Migration of meanders over time may lead to the formation of oxbow lakes when a bend gets cut off.

• Significance:

- Influences floodplain development.
- Plays a role in shaping alluvial landscapes.
- Important for ecosystems and agriculture due to fertile deposits.

Difference between Multi-threaded Rivers and Meandering Rivers

Feature	Multi-threaded Rivers	Meandering Rivers
Definition	A river that splits into two or more interconnected channels separated by bars or islands.	A river with a single channel that develops sinuous, snake-like bends.
Cause/Mechanism	Caused when bank erosion > deposition → channels widen and split into multiple threads.	Caused by lateral erosion and deposition balance → bends form due to helicoidal flow.
Appearance	Network-like, with several active water channels (braided/multi-thread pattern).	Winding or serpentine single channel with distinct loops.
Sediment Load	Usually associated with high sediment load (gravel, sand) and variable water flow.	Occurs in rivers with fine sediments (silt, clay) and steady flow.

Gradient	Typically, steeper gradients, unstable beds.	Typically, gentle gradients, low slope areas.
Examples	Brahmaputra in Assam (braided, multi-threaded).	Ganga in Bihar-UP plains, Mississippi River (USA).
Landforms Produced	Mid-channel bars, islands, multiple shifting channels.	Point bars, river cliffs, oxbow lakes, floodplains.

URBAN NOISE POLLUTION

Urban noise pollution has emerged as one of the most neglected public health and ecological challenges in India.

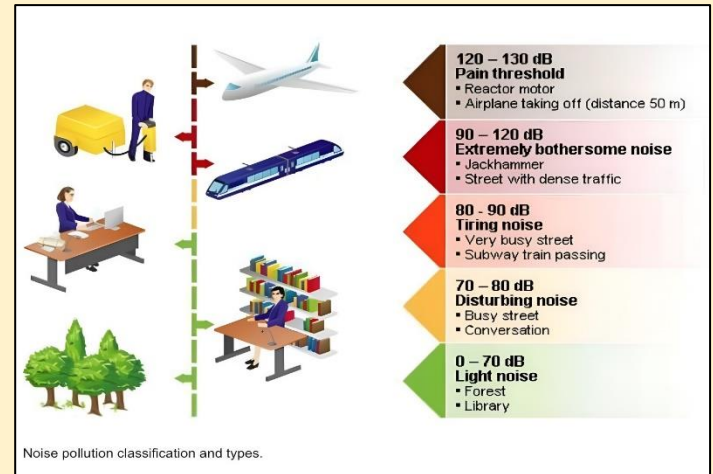
Despite legal frameworks like the Noise Pollution (Regulation and Control) Rules, 2000 and monitoring systems, decibel levels in Indian cities remain consistently above permissible limits, especially near sensitive institutions, eroding the constitutional promise of peace and dignity.

What is noise pollution?

Noise pollution refers to unwanted or excessive sound that can have harmful effects on human health, wildlife, and environmental quality.

- **Traffic:** Road traffic, railways, and air traffic are significant contributors to noise pollution in urban areas. The constant honking, engine noise, and tire friction create a chaotic sound environment.
- **Industrial Activities:** Factories and construction sites generate high levels of noise from machinery, drilling, and other operations, affecting workers and nearby residents.

- **Social and Recreational Activities:** Loud music, events, and recreational activities can also contribute to noise pollution, particularly in residential areas.



Impacts of Urban Noise Pollution

- Causes stress, sleep disturbance, hypertension, cardiovascular diseases, impaired cognitive performance, and mental health issues.
- Reduces productivity, disturbs peace in residential areas, and affects learning environments in schools and recovery in hospitals.
- Creates civic fatigue; constant honking and drilling normalise “sonic aggression,” eroding dignity and mental well-being.
- Alters animal behaviour, migration, and communication.
- 2025 University of Auckland Study found that urban noise and artificial light disrupted the sleep and song patterns of common mynas after just one night. The birds sang less and with reduced complexity, impairing their social signalling. This indicates a broader breakdown of ecological communication systems.

Laws related to noise pollution

Constitution provisions

- Article 21 guarantees the right to life with dignity, encompassing mental and environmental well-being.
- Article 48A mandates proactive environmental protection.

Judgement

- In 2024, the Supreme Court of India reaffirmed that environmental disruptions – including excessive noise – can infringe upon the fundamental right to life and dignity under Article 21. In *Noise Pollution (V), In Re*, the Court recognised that unchecked urban noise poses a serious threat to mental well-being and civic freedom.

Laws

- The **Noise Pollution (Regulation and Control) Rules, 2000** empower authorities to regulate and control noise levels in different zones (industrial, commercial, residential, and silence zones).
- They prescribe permissible decibel limits, restrict loudspeaker use, and provide for creation of “silence zones” around sensitive areas like hospitals, schools, and courts.

World Health Organisation

- According to the World Health Organization, safe limits in silent zones are 50 dB(A) by day and 40 dB(A) by night.
- Yet, in cities such as Delhi and Bengaluru, readings near sensitive institutions often reach 65 dB(A)-70 dB(A).

Issues in implementation of schemes (examples)

- **Failure of National Ambient Noise Monitoring Network**
 - In 2011, the Central Pollution Control Board (CPCB) launched the National Ambient Noise Monitoring Network (NANMN), which was envisioned as a real-time data platform.
 - A major technical issue has been the flawed placement of sensors, many of which are installed 25–30 feet above ground level, in violation of CPCB’s 2015 guidelines, thereby producing distorted readings that fail to capture ground-level reality.

- India faces regulatory fragmentation, poor transparency, and institutional silence, with States like Uttar Pradesh failing to release updated noise data even in 2025.

• Civil fatigue

- Noise normalised as part of urban living (honking, drilling, loudspeakers).
- Unlike smog or garbage, noise leaves no visible trace hence lack of outrage against the issue.

• Failure of implementation of Noise Pollution Rules, 2000

- The Noise Pollution Rules, 2000 are rarely updated to reflect urban realities.
- There is little coordination between municipal bodies, traffic police and pollution control boards.

Way Forward

- A **National Acoustic Policy** should be formulated on the lines of the National Ambient Air Quality Standards, setting clear benchmarks for permissible noise levels across zones. Such a policy can provide uniformity, define accountability, and integrate health and ecological considerations into planning.
- The **Noise Pollution (Regulation and Control) Rules, 2000** need urgent revision to reflect present urban realities such as rapid infrastructure expansion, 24×7 construction, and mixed-use zoning. Updated rules must introduce stricter limits, dynamic monitoring, and new categories of “high-risk areas.”
- The **National Ambient Noise Monitoring Network (NANMN)** should be decentralised. Local bodies and urban municipalities must be given access to real-time data with both responsibility and authority to act. This will ensure quicker response and reduce bureaucratic delays.

- **Data collection** must be directly linked to penalties, zoning compliance, and restrictions on construction and traffic violations. Without deterrence, rules remain ineffective.
- **Night-time construction and logistics-related activities** such as drilling, crane operations, and heavy vehicular movement must be strictly regulated, with exceptions allowed only for essential services.
- Effective enforcement requires inter-agency coordination. **State Pollution Control Boards (SPCBs), municipal corporations, and traffic police** should operate through a shared platform to avoid duplication, inefficiency, and institutional silence.
- **The Smart Cities Mission** must incorporate acoustic resilience as a design parameter. Urban planning should not only focus on mobility and expansion but also on creating healthier and quieter spaces.
- **Quiet zones** must be established and actively enforced around sensitive areas such as schools, hospitals, and courts.
- Structural interventions like **green buffers, tree belts, and noise barriers** along highways, metro lines, and airports should be prioritised to mitigate constant noise exposure in dense traffic zones.
- **Educational interventions** can play a critical role. Noise awareness should be included in school curricula, and driver training institutes should make it a core component of traffic education.

Noise pollution is no longer just an environmental issue but a constitutional, ecological and cultural challenge. Unless India adopts a rights-based, holistic approach, its smart cities may remain unliveable in terms of soundscape. Silence must not be imposed it must be enabled through governance, design and collective civic responsibility.

HIMALAYAN BROWN BEAR

The Himalayan brown bear (*Ursus arctos isabellinus*) has recently gained attention following an attack on Pakistani singer Quratulain Balouch in Deosai National Park, Gilgit-Baltistan. This incident marks growing human-bear conflicts in the region.

Scientific studies indicate that these conflicts are increasing due to habitat loss, climate change, and human food waste. The bear, a top predator and ecological indicator, faces threats from rapid warming and expanding human settlements in the Himalayas.



Ecology and Distribution

- The Himalayan brown bear is less studied compared to its North American and European cousins.
- It inhabits alpine and sub-alpine regions in the north-western and western Himalayas.
- Its population is declining due to habitat fragmentation caused by deforestation and human land use.
- The bear prefers areas with low human density and minimal disturbance but is increasingly forced into contact with humans due to shrinking habitats.

Impact of Climate Change

The Himalayas are warming faster than many global regions, with temperatures expected to rise by up to 3°C by 2100. This warming affects the bear's habitat by shrinking suitable ranges and altering food availability.

Changes in snowfall and winter duration extend the bear's foraging season, sometimes causing it to seek food within human settlements. Climate change thus intensifies habitat pressure and human-bear encounters.

Human-Bear Conflict Dynamics

Conflicts have surged in areas like the Zaskar region of Ladakh and Lahaul valley in Himachal Pradesh. Bears raid livestock and enter villages searching for food, often conditioned by human waste and crops.

Conflicts peak in autumn during hyperphagia, when bears fatten for hibernation and reproduction. Despite economic losses, no human fatalities have been reported in recent years in these zones.

Community Responses

Local communities report increased bear sightings and damage to livestock and crops. Poor understanding of bear behaviour and unregulated grazing worsen conflicts.

Studies recommend improved waste management, controlled grazing, and community watch groups. Ecotourism and protected areas could support coexistence but require integration with climate change mitigation strategies.

Conservation Challenges

Conservation efforts face challenges due to limited ecological data and increasing human pressures. Protecting habitats alone is insufficient. Experts urge incorporating climate adaptation into conservation plans.

- **Status:**

- **IUCN Red List- Critically Endangered**

- Brown bear (*Ursus arctos*) is listed as **Least Concern**.

- **CITES - Appendix I.**

- Only the populations of Bhutan, China, Mexico and Mongolia; all other populations are included in Appendix II.

- **Indian Wildlife (Protection) Act of 1972 - Schedule 1.**

Establishing protected zones in bear-abundant areas and promoting sustainable land use are vital. Community involvement and awareness are key to reducing conflicts and preserving this vulnerable species.

NEW VICE-PRESIDENT ELECTED

India's Vice-President is being elected today. NDA candidate C.P. Radhakrishnan is strongly favored over Opposition nominee Justice B. Sudershan Reddy due to NDA's numerical strength and YSRCP's support.

The abstention of BJD and BRS has further reduced the effective majority needed.

- **Numbers Game:** NDA commands 425 of 781 eligible votes, while the Opposition has 324. The winning majority is 391, giving the NDA a clear edge.
- **Candidates:**
 - C.P. Radhakrishnan (68): Veteran BJP leader, former governor, seen as a loyal party figure.
 - Justice B. Sudershan Reddy (79): Former Supreme Court judge, known for civil rights judgments.
- **Other Factors:** Enhanced CRPF security for VP's residence and mock poll training to ensure valid voting.

Vice-President election in India:

Constitutional Basis

- Provided under Article 63-71 of the Constitution.
- The Vice-President is the ex-officio Chairman of the Rajya Sabha.

Electoral College

- Composed of members of both Houses of Parliament (Lok Sabha + Rajya Sabha).
- Consist both Elected and nominated MPs (in the case of president, only elected members).
- This is different from the President's election, where State Legislatures also participate.

Election Process

- Conducted by the Election Commission of India.
- Held through proportional representation by means of a single transferable vote (STV), and voting is by secret ballot.

- A candidate must secure a quota of votes (more than 50% of valid votes cast).

Eligibility Criteria (Article 66, 67)

- Citizen of India.
- At least 35 years of age.
- Qualified to be elected as a Rajya Sabha member.
- Cannot hold an office of profit.

Term and Removal

- Term: 5 years, but eligible for re-election.
- Can resign to the President.
- Removal: By a resolution of Rajya Sabha, passed by an effective majority, and agreed to by Lok Sabha.

Key Points

- In case of a vacancy in the President's office, the Vice-President acts as President until a new one is elected.
- The office ensures continuity in governance and parliamentary functioning.

STABLE COINS

Stablecoins, digital assets pegged to the US dollar, are expanding rapidly with a market capitalization above \$280 billion, projected to reach \$2 trillion within three years.

Why They Matter

- Enable instant, low-cost, dollar-pegged settlements.
- 99% are dollar-backed, mainly by Tether and Circle.
- Boost global demand for US Treasury bonds as reserves are held in such assets.

Global & Policy Implications

- Reinforce the US dollar's global "exorbitant privilege."
- Risks include financial instability, regulatory arbitrage, and shadow banking.
- Vulnerabilities may arise if reserves lose value or confidence falters.
- New regulations are under discussion, especially in the US and Europe.



Different types of cryptocurrencies:

Payment Cryptocurrencies

- Designed as digital money for peer-to-peer transactions.
- Focus on being a medium of exchange and store of value.
- Examples: Bitcoin (BTC), Litecoin (LTC).

Stablecoins

- Cryptocurrencies pegged to stable assets like the US dollar, gold, or government bonds.
- Aim to reduce price volatility and enable fast, low-cost settlements.
- Examples: Tether (USDT), USD Coin (USDC), DAI.

Utility Tokens

- Provide access to specific products or services within a blockchain ecosystem.
- Often used to pay for transaction fees, storage, or smart contract execution.
- Examples: Ethereum (ETH), Binance Coin (BNB).

Security Tokens

- Represent ownership of real-world assets (like shares, bonds, or property).
- Regulated under securities laws, providing dividends or profit-sharing rights.
- Example: Tokenized stocks or real estate platforms.

Central Bank Digital Currencies (CBDCs) (state-backed)

- Issued and regulated by central banks, unlike decentralized cryptos.
- Aim to provide digital versions of national currencies.
- Example: Digital Yuan (e-CNY), Digital Rupee (pilot in India).

Privacy Coins

- Focus on enhanced anonymity and untraceable transactions.
- Use advanced cryptography to hide sender, receiver, and amount.
- Examples: Monero (XMR), Zcash (ZEC).

Governance Tokens

- Allow holders to vote on blockchain protocol changes, upgrades, or treasury decisions.
- Enable decentralized governance of networks.
- Examples: Uniswap (UNI), Maker (MKR).

GEOTAGGING OF BUILDING IN 2027 CENSUS

For the first time, the 2027 Census will include geotagging of all buildings, marking their precise latitude-longitude using GIS technology

- A Census House will be geotagged during the House Listing Operations (April-September 2026).

How it Works

- Enumerators will use smartphones to map each building in its House Listing Block through Digital Layout Mapping.
- All buildings—residential, vacant, or non-residential—will be classified and digitally mapped.



Benefits

- Ensures accurate counts of houses and households.
- Improves field management and data integrity.
- Supports better resource planning and policy-making.
- Builds on geotagging experience from earlier housing schemes but will be India's largest digital mapping exercise.

Geotagging

- Definition: Geotagging is the process of attaching the geographical coordinates (latitude and longitude) to physical objects, locations, or digital content such as photographs, buildings, and infrastructure.

How it Works

- Uses GPS (Global Positioning System) and GIS (Geographic Information System) technology.
- Smartphones or digital devices capture the exact position of an object on Earth and tag it with coordinates.

Applications

1. Governance & Planning – Used in Census operations, government housing schemes, and urban planning.
2. Disaster Management – Helps track affected areas, resources, and relief distribution.
3. Environmental Monitoring – Mapping forests, wetlands, and wildlife habitats.
4. Security & Law Enforcement – Tracking assets, monitoring borders, and crime mapping.
5. Everyday Use – Social media check-ins, tagged photographs, and navigation apps.

Benefits

- Improves accuracy, transparency, and accountability.
- Facilitates better planning, monitoring, and decision-making.

MULTIDIMENSIONAL POVERTY INDEX

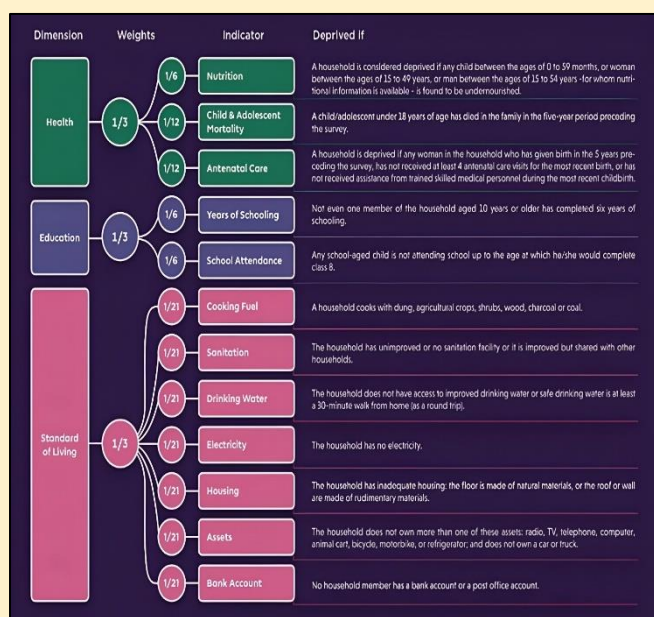
Recent discussion on MPI

Key Highlights

- Inaugural addresses by NITI leadership, EAC-PM, UN representatives, and policy experts.
- Focused on MPI as a tool for poverty reduction, governance improvement, and advancing SDGs.
- Discussions on data-driven policymaking, reducing survey periodicity, and improving targeting of welfare schemes.
- States shared innovations like Tamil Nadu's Breakfast Scheme, UP's Sambhav Abhiyan, Andhra's Zero Poverty-P4, and Odisha's Social Protection Platform.
- Technical sessions explained MPI methodology with hands-on exercises.

Significance

The workshop aimed to strengthen national and state capacity to apply MPI data for policymaking, program delivery, and monitoring—ensuring more precise poverty alleviation and leaving no one behind.



Multidimensional Poverty Index (MPI)

- The MPI is a global measure developed by the UNDP and Oxford Poverty & Human Development Initiative (OPHI) to capture poverty beyond income levels.
- It reflects deprivations in multiple dimensions of human development that directly affect well-being.

Dimensions & Indicators

MPI is based on three broad dimensions, subdivided into indicators:

1. Health – Nutrition, Child mortality.
 2. Education – Years of schooling, School attendance.
 3. Standard of Living – Cooking fuel, Sanitation, Drinking water, Electricity, Housing, Assets.
- A household is considered multidimensionally poor if it is deprived in at least one-third (33%) of the weighted indicators.

Calculation

- $MPI = \text{Incidence of poverty (H)} \times \text{Intensity of poverty (A)}$
 - H : Proportion of people who are multidimensionally poor.
 - A : Average proportion of deprivations experienced by poor households.

Significance

- Provides a holistic measure of poverty, not just monetary poverty.
- Helps governments identify target groups, allocate resources, and monitor progress toward SDG 1 (No Poverty).
- India publishes its own National MPI through NITI Aayog, adapted to local conditions.

PROPERTY RIGHTS TO TRIBAL WOMEN

The Supreme Court of India delivered a landmark judgment on July 17, 2025, affirming the property rights of tribal women. The ruling in *Ram Charan and Ors. vs Sukhram and Ors.* declared that excluding daughters from ancestral property violates their fundamental right to equality.

This decision marks step towards gender justice in tribal communities where customary laws often deny women inheritance rights.

Background of the Case

The case involved the legal heirs of Dhaiya, a Scheduled Tribe woman from Sarguja district, Chhattisgarh. They sought partition of ancestral property inherited from their maternal grandfather.

The defendant refused, citing tribal customs that exclude female heirs. Lower courts initially dismissed the plea, stating no such custom existed to grant daughters inheritance rights. The High Court later granted equal shares to the female heirs, recognising gender discrimination in customary practices.



Customary Laws and Gender Discrimination

Tribal customary laws in Scheduled Areas govern marriage, succession, and adoption. Most deny women rights to ancestral land despite their contribution to agriculture. For example, only 16.7% of Scheduled Tribe women own land compared to 83.3% of men.

These customs often exclude women to prevent land alienation through marriage to non-tribal men. However, land sales rarely benefit the whole community, questioning the validity of such customs.

Legal Precedents and Challenges

Earlier, the Supreme Court in *Madhu Kishwar vs State of Bihar* (1996) upheld customary laws denying women inheritance, fearing legal chaos. However, recent rulings like *Prabha Minz vs Martha Ekka* (2022) and *Kamala Neti vs Special Land Acquisition Officer* (2022) show a shift.

Courts are increasingly scrutinising customs for antiquity, certainty, reasonableness, and conformity with public policy before upholding them.

Need for Legislative Reform

Current laws like the Hindu Succession Act exclude tribal women explicitly. This exclusion marks the need for a separate Tribal Succession Act.

Codifying tribal laws similar to Hindu and Christian succession laws could ensure gender equality and legal clarity. Such reform would protect tribal women's rights and promote social justice without disrupting tribal customs.

Impact on Tribal Society

Recognising women's property rights challenges patriarchal norms in tribal communities. It empowers women economically and socially. Equal inheritance rights can improve women's status and reduce gender-based discrimination.

The Supreme Court's judgment encourages re-examination of customs that perpetuate inequality and supports inclusive development in tribal areas.

INDIA'S FIRST INDIGENOUS MULTI-STAGE MALARIA VACCINE

AdFalcivax - India's Indigenous Malaria Vaccine

Overview:

AdFalcivax is India's first indigenous recombinant chimeric malaria vaccine, developed by the Indian Council of Medical Research (ICMR) in collaboration with its research institutes. It targets *Plasmodium falciparum*, the deadliest malaria parasite, and is designed to prevent both individual infections and transmission in the community.



Key Features:

- **Dual-Stage Protection:**
 - Pre-erythrocytic stage: Prevents liver infection using the circumsporozoite protein.
 - Transmission-blocking stage: Inhibits parasite development in mosquitoes using a fusion protein.
- **Production Platform:** Uses *Lactococcus lactis*, a safe, food-grade bacterium, ensuring scalable and cost-effective vaccine production.
- **Thermal Stability:** Maintains efficacy for over nine months at room temperature, making it suitable for distribution in tropical regions with limited cold-chain infrastructure.
- **Immunogenicity:** Induces robust and long-lasting immunity, with protection lasting several months post-booster dose.

INTERNATIONAL LITERACY DAY

The Ministry of Education celebrated **ILD 2025 on September 8**.

Theme: *"Promoting Literacy in the Digital Era"* at Dr. Ambedkar International Centre, New Delhi.

Key Highlights:

- Attended by Union Minister Dharmendra Pradhan (virtually), Minister of State Jayant Chaudhary (Chief Guest), and other stakeholders.

- Focused on digital, civic, and financial literacy alongside traditional literacy.
- Himachal Pradesh was declared the 5th fully literate state/UT after Tripura, Mizoram, Goa, and Ladakh.

Initiatives:

- ULLAS-Nav Bharat Saaksharta Karyakram drives literacy via community participation and hybrid learning.
- ULLAS Literacy Week (Sept 1-8) registered non-literates and volunteers nationwide.
- Learning material is now available in 26 Indian languages for inclusivity.

Vision:

ILD 2025 highlighted how digital tools aid literacy, numeracy, and lifelong learning, particularly in underserved regions. The government reiterated its goal of universal literacy aligned with the vision of *Viksit Bharat*.

Definition of Literacy in India

In India, a person is considered **literate** if they are aged **7 years or above** and can **read and write with understanding** in any language. This definition is consistent with international standards and is used in official surveys.

Literacy Rate in India (2023-24)

- **Overall literacy rate:** 80.9% for individuals aged 7 and above.
- **Male literacy rate:** 87.2%
- **Female literacy rate:** 74.6%

The figures highlight a **gender gap of 12.6 percentage points** in literacy rates.

Top-Performing States

The states with the highest literacy rates are:

1. **Mizoram** – 98.2%
2. **Lakshadweep** – 97.3%
3. **Kerala** – 95.3%

These states have implemented effective educational policies and community engagement programs to achieve high literacy.

NATIONAL POLICY ON GEOTHERMAL ENERGY UNVEILED.

Key Highlights

- First-ever national framework for geothermal exploration, development, and utilization.
- Grants renewables-like incentives: must-run status, open access charge waivers, and grid access.
- Identifies 10 geothermal provinces and 381 hot springs with ~10 GW potential (Himalayas, Cambay, Aravalli, Godavari, Mahanadi etc.).
- Covers high-enthalpy (electricity), low/medium enthalpy (heating, cooling, agriculture, aquaculture, GSHPs), hybrid systems, and reuse of abandoned oil/gas wells.
- Streamlined regulatory setup: single-window clearances, long-term leases, centralized geothermal data.

Incentives & Financial Support

- 100% FDI permitted; concessional loans, risk-sharing for drilling, tax/GST relief, accelerated depreciation, viability gap funding.
- Participation in Indian Carbon Credit Trading Program encouraged.

Pilot Projects & Collaborations

- Five pilot projects sanctioned, incl. 450 kW plant in Rajasthan using abandoned oil wells.
- Partnerships with Iceland, Norway, and the U.S. for technology transfer.
- Push for local innovation, PPPs, and oil-gas repurposing.

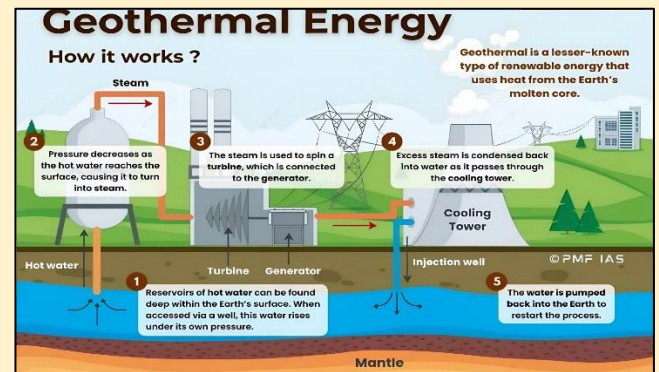
Relevance to Net Zero 2070

- Reliable 24×7 clean power, critical for diversified renewable mix.
- Supports decarbonization in buildings, agriculture, tourism, and rural development.

Implementation

- Led by MNRE; states act as nodal agencies for clearances, project facilitation, and capacity building.

Significance: Positions geothermal as a mainstream renewable, boosting energy security, jobs, and climate goals.



Geothermal Energy

- **Definition:** Renewable energy derived from the natural heat of the Earth's interior, stored in rocks, magma, hot water, and steam.
- **Sources:** Heat is tapped from geothermal reservoirs, hot springs, geysers, and deep wells.
- **Applications:**
 - Electricity generation (high-enthalpy resources).
 - Direct use in heating, cooling, aquaculture, greenhouses, and industry.
 - Geothermal Heat Pumps (GSHPs) for space heating/cooling.
- **Advantages:**
 - Clean, renewable, and sustainable.
 - Available 24×7 (baseload power, unlike solar/wind).
 - Low greenhouse gas emissions and land footprint.
- **Challenges:**
 - High upfront drilling cost and geological risks.
 - Location-specific potential (limited to tectonically active/hotspot areas).
 - Risk of induced seismicity and water contamination if not managed well.
- **Global Leaders:** Iceland, USA, Philippines, Indonesia, and Kenya.

- India's Potential: ~10 GW identified; major provinces include Himalayas, Cambay Basin, Aravalli, Godavari, and Mahanadi regions.
- Significance: Geothermal energy is a stable, round-the-clock renewable source crucial for clean energy transition and achieving climate goals.

UN GENOCIDE CONVENTION

UN commission has concluded that Israel is committing genocide in Gaza

Accusing leaders including Prime Minister Benjamin Netanyahu of incitement. The panel, led by Navi Pillay, found Israeli forces guilty of four of the five genocidal acts under the 1948 Genocide Convention—killing, causing serious harm, creating destructive living conditions, and preventing births—citing explicit statements by officials as proof of intent.

Israel rejected the findings as “distorted and false,” demanding the commission’s abolition. Meanwhile, the Israeli military launched a new ground offensive in Gaza City, advancing on the territory’s largest urban center.

1948 Genocide Convention

- Full name: Convention on the Prevention and Punishment of the Crime of Genocide (CPPCG).
- Adoption: Adopted by the UN General Assembly on 9 December 1948 (Resolution 260 A (III)); entered into force on 12 January 1951.



- Objective: First human rights treaty of the UN era, aimed at preventing and punishing genocide in times of peace or war.
- Definition of Genocide (Article II): Certain acts committed with intent to destroy, in whole or in part, a national, ethnic, racial, or religious group, including:
 1. Killing members of the group.
 2. Causing serious bodily or mental harm.
 3. Inflicting living conditions to bring about destruction.
 4. Preventing births within the group.
 5. Forcibly transferring children of the group.
- Obligations: States must prevent and punish genocide, whether committed by state actors or individuals.
- Punishment (Article IV): Applies to constitutionally responsible rulers, officials, and private individuals.
- Court jurisdiction: Cases may be tried in national courts or before an international tribunal (like the International Court of Justice, as seen in *Bosnia v. Serbia*, *The Gambia v. Myanmar*).

TYPHOON MISSILE

China has urged the U.S. and Japan to withdraw the U.S.-developed Typhon missile system

Unveiled for the first time in Japan during the *Resolute Dragon* joint exercises at Iwakuni air station. Japan confirmed the system would not be fired but said its deployment strengthens deterrence amid a worsening security environment.

Beijing expressed strong opposition, accusing the two countries of ignoring its concerns. The Typhon system, part of U.S. Army modernization, is a truck-based launcher using modified SM-6 and Tomahawk missiles.



Typhon Missile System

- **Developer:** United States Army, as part of its *Mid-Range Capability (MRC)* program under Army modernization.
- **First Deployment:** Publicly showcased in Japan in 2025 during the *Resolute Dragon* joint exercises.
- **Platform:** Truck-based, trailer-mounted ground launch system.
- **Missile Types:** Launches modified versions of:
 - SM-6 (Standard Missile-6): Surface-to-air missile with extended range, capable of ballistic and cruise missile defense, as well as anti-ship roles.
 - Tomahawk cruise missile: Long-range, precision strike, land-attack missile.
- **Range Category:** Falls into the mid-range missile class (roughly 500–1,800 km).
- **Purpose:** Designed to fill the gap between shorter-range systems (like HIMARS) and long-range hypersonic weapons, giving the U.S. Army the ability to strike ships and land targets.
- **Strategic Significance:** Enhances U.S. and allied deterrence capabilities in the Indo-Pacific, but seen by China as destabilizing to regional security.

INTERNATIONAL SEABED AUTHORITY (ISA)

India has received a landmark licence from the International Seabed Authority (ISA) to explore polymetallic sulphide deposits in the Carlsberg Ridge.

It is a 300,000 sq km area of the northwest Indian Ocean and Arabian Sea. This is the world's first licence of its kind, granting India exclusive rights to survey and potentially exploit minerals like manganese, cobalt, nickel, and copper—critical for batteries, electronics, and renewable energy.

India already holds ISA licences in the Central Indian Ocean Basin (till 2027) and the Indian Ocean Ridge (till 2031). The Carlsberg Ridge licence strengthens India's role in securing critical mineral supply chains and counters competition from countries such as China.

However, deep-sea mining raises environmental concerns. India has committed to ecological assessments while pursuing its deep-ocean mineral strategy. The initiative is backed by the global framework of UNCLOS and regulated by the International Seabed Authority, which oversees seabed resources in areas beyond national jurisdiction.

International Seabed Authority (ISA)

- **Establishment:** Created in 1994 under the United Nations Convention on the Law of the Sea (UNCLOS), following the 1994 Agreement on Part XI of UNCLOS.
- **Headquarters:** Kingston, Jamaica.
- **Mandate:** Regulates exploration and potential exploitation of mineral resources in the international seabed area (the "Area") which lies beyond national jurisdiction, considered the "common heritage of mankind."



● **Functions:**

- Granting exploration and mining licences for deep-sea minerals such as polymetallic nodules, sulphides, and cobalt-rich crusts.
- Ensuring equitable sharing of benefits from seabed resources among all member states.
- Protecting the marine environment through regulations and mandatory environmental impact assessments.

● **Membership:** 167 countries + European Union.

● **Council & Assembly:** Key decision-making bodies; the Legal and Technical Commission provides expert recommendations.

● **Significance for India:**

- India was among the first countries to receive exploration licences from the ISA.
- Currently holds contracts for the Central Indian Ocean Basin, Indian Ocean Ridge, and now the Carlsberg Ridge.
- Supports India's Deep Ocean Mission for critical mineral security.

MANKI-MUNDA SYSTEM

The Manki-Munda system is a centuries-old self-governance framework of the Ho adivasi community in Jharkhand's Kolhan region.

Structure and Function

- Each village is led by a hereditary Munda, who resolves disputes and maintains order.
- A Manki oversees a cluster of 8-15 villages, handling unresolved issues.
- The system is decentralized, hereditary, and non-revenue-based, traditionally functioning without external taxation or state intervention.

British Influence

- In 1833, the British codified it under "Wilkinson's Rules", marking the first formal recognition of an adivasi self-governance system. This preserved some autonomy but enabled outsider entry and land changes.

HINDI DIWAS CELEBRATED

On Hindi Diwas 2025, Union Home Minister Amit Shah greeted the nation, calling India a "language-centric country."

He described Hindi and all Indian languages as carriers of culture, history, knowledge, and traditions, and highlighted Hindi as a bridge of national unity across regions.

Key Points of His Message

- **Diversity and Unity:** Indian languages have historically given voice to all sections and united people during the freedom struggle.
- **Role of Hindi:** Evolving from a language of expression into one of technology, science, and research.
- **Cultural Recognition:** Literary and spiritual works from all regions enrich the nation's heritage.
- **Vision for the Future:** Under PM Modi's leadership, Indian languages are experiencing a revival through initiatives like 'Bharatiya Bhasha Anubhav' for easy translation and promotion in law, education, administration, and technology.

- Digital Era: Emphasis on preparing Indian languages, especially Hindi, for e-governance, AI, and global competition.

Shah's core appeal was to respect all Indian languages and move towards a self-reliant and united India, with the message: "Let us move together, think together, and speak together."



Official Languages Act, 1963:

- **Background:**
 - Article 343 of the Constitution made Hindi in Devanagari script the official language of the Union.
 - English was to continue for 15 years (till 1965) as an associate official language.
 - Widespread protests (especially in southern states) against the exclusive adoption of Hindi led to the enactment of this Act.
- **Key Provisions:**
 1. Continued Use of English: English shall continue, along with Hindi, for official purposes of the Union and for communication between the Union and non-Hindi-speaking states, even after 1965.
 2. Parliamentary Proceedings: Members may address the House in Hindi or English.
 3. Authoritative Texts: Laws enacted in Hindi and English are considered equally authoritative.

4. States' Communication: Communication between the Union and states using Hindi as official language is in Hindi; with other states, it is in English.
5. Rules and Orders: The Act empowers the President to issue rules for progressive use of Hindi and regulate official communication.

- **Subsequent Amendment (1967):**

1. Made the use of English indefinite, ensuring it would not be discontinued without approval from states not using Hindi.

- **Significance:**

1. Balanced national integration with linguistic diversity.
2. Prevented the imposition of Hindi as the sole official language.
3. Enabled smooth functioning of central administration and interstate communication.

ZAPAD

Russia has conducted "Zapad" joint military drills with Belarus, featuring a successful Zircon hypersonic cruise missile launch in the Barents Sea and strikes by Su-34 fighter-bombers.

The exercises, described as defensive, aim to enhance coordination. The Zircon, claimed to fly at nine times the speed of sound with a range over 1,000 km, hit its target directly. The drills follow recent Russian drone incursions into Poland and NATO's "Eastern Sentry" response.



Zircon Hypersonic Cruise Missile

- Type: Hypersonic cruise missile developed by Russia.
- Speed: Claimed to reach Mach 8-9 (8-9 times the speed of sound).
- Range: Estimated 1,000-1,500 km.
- Launch platforms: Can be launched from surface ships, submarines, and coastal launchers.
- Propulsion: Uses a scramjet engine after booster separation, allowing sustained hypersonic flight.
- Warhead: Can carry conventional or nuclear payloads.
- First tests: Reportedly conducted in 2016, with more frequent trials since 2020.
- Deployment: Russia has started integrating Zircon into its naval fleet, particularly on Admiral Gorshkov-class frigates and Yasen-class submarines.
- Strategic significance: Its speed and maneuverability make it difficult for existing air defense and missile defense systems to intercept, giving Russia a potential edge in anti-ship and land-attack roles.

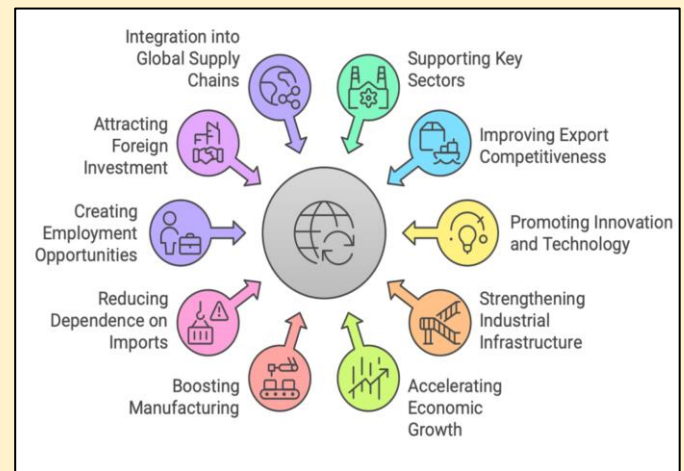
PRODUCTION-LINKED INCENTIVE (PLI) SCHEME

The government has reopened applications for the Production-Linked Incentive (PLI) scheme for white goods—air conditioners and LED lights—from September 15 to October 14.

The move aims to boost domestic manufacturing of components not adequately produced in India. Both new and existing investors can apply. So far, 83 applicants have committed ₹10,406 crore. Launched in April 2021, the scheme runs for seven years (2021-22 to 2028-29) with a total budget of ₹6,238 crore.

Production-Linked Incentive (PLI) Scheme Introduction

- Launched by the Government of India in March 2020, initially for large-scale electronics manufacturing (mobile phones & components).
- Later expanded to 14 key sectors to promote *Atmanirbhar Bharat* (self-reliant India).
- Objective: Make India a global manufacturing hub, reduce import dependency, create jobs, strengthen supply chains, and boost exports.



Coverage

The scheme now covers 14 sectors:

1. Large-scale electronics (mobiles, components)
2. Pharmaceuticals & drug intermediaries
3. Medical devices
4. Telecom & networking products
5. Food processing
6. White goods (air conditioners, LED lights)
7. High efficiency solar PV modules
8. Advanced chemistry cell (ACC) batteries
9. Automobiles & auto components
10. Specialty steel
11. Textile & man-made fibers
12. IT hardware (laptops, tablets, servers)
13. Drones & drone components
14. Semiconductors & display manufacturing

Budget & Duration

- Total Outlay: ~₹1.97 lakh crore (over 7 years).
- Duration: Generally from 2020-21 to 2028-29, depending on the sector.
- Each sector has separate guidelines on eligibility, base year, and incentive slabs.

How It Works

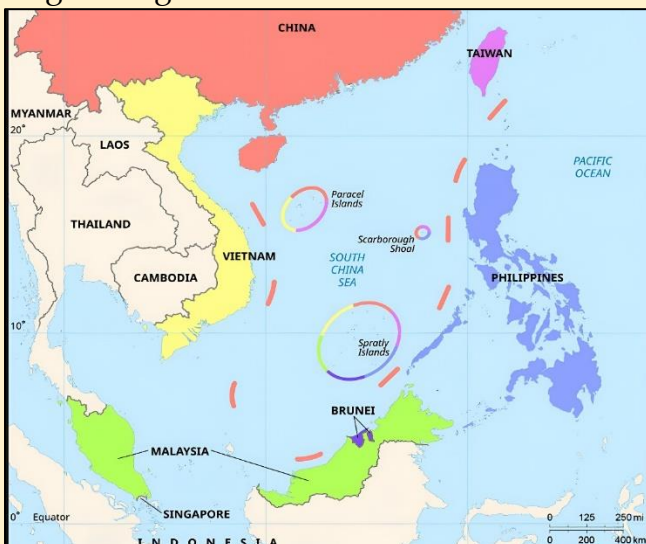
- Incentives (usually 4%–6%) are given on incremental sales of goods manufactured in India, compared to a base year.
- Incentives decrease gradually over the years.
- Both domestic and foreign companies are eligible if they commit to minimum investment and sales targets.

SCARBOROUGH SHOAL

The Scarborough Shoal is a contested reef chain in the South China Sea, about 200 km off the Philippines' coast and near major shipping lanes.

Claimed by both the Philippines and China, it has been under China's effective control since 2012 despite a 2016 ruling that invalidated Beijing's broader claims.

Recently, China announced a nature reserve there, fueling fears it may build a militarized island. Tensions are rising as Philippine leaders take a tougher stance, with the U.S.–Philippines Mutual Defence Treaty heightening the risk of wider conflict.



Nine-Dash Line

The Nine-Dash Line is a demarcation used by China to claim a large part of the South China Sea. It appears on Chinese maps as nine dashes or lines that extend far south and east from the Chinese mainland, covering about 90% of the South China Sea.

Origin:

- First appeared in 1947 on a map published by the then Republic of China.
- The People's Republic of China inherited the claim in 1949.

Features:

- The line is not internationally recognized.
- It overlaps with the exclusive economic zones (EEZs) and territorial waters of several countries:
 - Vietnam
 - Philippines
 - Malaysia
 - Brunei
 - Taiwan (also claims the line)

Legal Status:

- In 2016, the Permanent Court of Arbitration (PCA) in The Hague ruled that China's claims based on the Nine-Dash Line have no legal basis under the United Nations Convention on the Law of the Sea (UNCLOS).
- China rejected the ruling.

Strategic Importance:

- South China Sea is a major maritime trade route.
- Rich in fisheries and potential oil and gas reserves.
- Crucial for naval and geopolitical influence in the Indo-Pacific region.

India's Perspective:

- India does not recognize the Nine-Dash Line.
- Supports freedom of navigation and rules-based maritime order.
- Engages in diplomatic and naval presence through QUAD, ASEAN dialogues, and freedom of navigation operations.

INS ARAVALI

INS Aravali is a newly commissioned shore-based naval information and communication facility of the Indian Navy in Gurugram, Haryana.

Key Highlights

- **Nature:** Not a warship, but a state-of-the-art naval information base.
- **Role:** Functions as a headquarters for real-time maritime surveillance, data fusion, and threat detection in the Indian Ocean Region.
- **Global Linkages:** Connects with 43 multinational centers across 25 countries for live maritime data sharing, aiding cooperation against piracy, terrorism, smuggling, and illegal fishing.
- **Symbolism:** Named after the resilient Aravali Range; its crest features a mountain and rising sun symbolizing strength and vigilance.



Core Capabilities

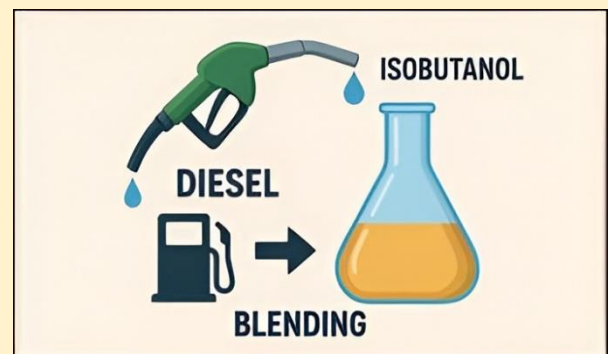
- **AI-driven surveillance** of ships and submarines with rapid threat analysis.
- **Satellite-enabled communication** through GSAT-7R.
- **National Maritime Domain Awareness Center (NMDA)** to be housed within, integrating security and intelligence agencies.
- **Global maritime hub** for India's international security partnerships.

ISOBUTANOL

The Indian government is conducting trials to blend isobutanol with diesel fuel after ethanol-diesel blends failed due to engine compatibility issues like corrosion and operational problems.

Why Isobutanol?

- **Better Compatibility:** A four-carbon alcohol with higher energy density and lower water absorption than ethanol, reducing corrosion risks in diesel engines.
- **Ongoing Trials:** A 10% isobutanol-diesel blend is being tested for performance, emissions, and efficiency.
- **Policy Push:** Supports the National Biofuel Policy by reducing oil imports, enhancing energy security, and creating farmer income through biomass demand.



National Biofuel Policy, 2018

- **Objective:** To promote the production and use of biofuels for reducing crude oil imports, ensuring energy security, generating rural income, and promoting cleaner fuels.
- **Key Features:**
 - **Types of Biofuels:** Categorized as *Basic* (1G – ethanol from sugarcane juice, molasses, etc.) and *Advanced* (2G ethanol, drop-in fuels, bio-CNG, bio-hydrogen).
 - **Feedstock Expansion:** Allows production of ethanol from surplus food grains (like maize, damaged grains, rice, etc.) subject to approval.
 -

- **Blending Targets:**
 - *Ethanol Blending in Petrol:* Achieve 20% (E20) by 2025-26.
 - *Biodiesel Blending in Diesel:* Achieve 5% by 2030.
- **Incentives:** Viability gap funding, tax incentives, and interest subvention for 2G bio-refineries.
- **Waste-to-Wealth:** Promotes biofuels from urban, industrial, and agricultural waste to reduce environmental pollution.
- **Recent Context:**
 - E20 blending with petrol has been achieved nationwide.
 - Diesel blending with ethanol failed, leading to current trials with **isobutanol-diesel blends** as an alternative.
- **Significance:**
Reduces dependence on fossil fuels, improves air quality, supports farmer incomes, and contributes to India's climate goals under the **Paris Agreement**.

RIGHT TO INFORMATION ACT

The **Right to Information (RTI) Act, 2005** was a landmark legislation that empowered citizens to hold the state accountable by accessing information. It has been one of the strongest tools for ensuring transparency, curbing corruption, and deepening participatory democracy.

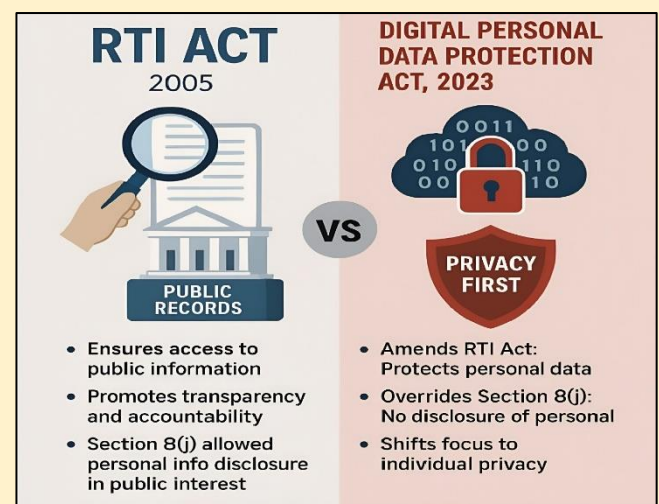
However, recent amendments through the **Digital Personal Data Protection (DPDP) Act, 2023** have drastically altered **Section 8(1)(j)** of the RTI Act. This shift, critics argue, effectively transforms RTI into a "Right to Deny Information (RDI)".

About Right to Information

- The Right to Information (RTI) Act is based on the idea that in a democracy citizens elect their representatives, who then control the bureaucracy, so the information must flow back to the people.

- One important exemption is Section 8(1)(j), which deals with personal information.
- According to the Section, the government could refuse to give information only in two cases:
 1. If the information had nothing to do with any public work or public activity.
 2. If giving it would unnecessarily interfere with someone's personal privacy unless sharing it was clearly in the larger public interest (for example, exposing corruption).
- *There was also a strong safeguard:* if the government could not refuse that information to Parliament or a State Legislature, then it could not refuse it to an ordinary citizen either.
- Restrictions on RTI must follow Article 19(2) of the Constitution, which limits them only on grounds like decency and morality. If sharing violates decency or morality, it can be denied both to Parliament and to citizens.

(**Public work / public activity** means any task, function, or duty that the government, a public authority, or a public official performs as part of their job for the people.)



The Amendments under DPDP Act

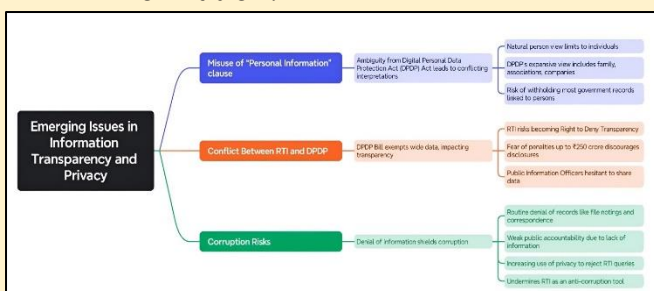
- The DPDP Act has changed Section 8(1)(j) of the RTI Act, making it very easy to deny information.
- The main problem is the meaning of "personal information," which is not clearly defined.

- There are two different ways to understand it:
 1. One view is that “person” means only a normal human being (natural person).
 2. Another view, based on the DPDP Act, says “person” also includes companies, firms, associations, Hindu undivided families, and even the State.
- If the broader DPDP definition is applied, almost everything can be treated as personal information.
- This allows most information to be denied, turning RTI into a “Right to Deny Information (RDI).”
- Such an interpretation goes against the spirit of transparency and accountability.
- The DPDP Act also has a clause that overrides all other laws in case of conflict, making it stronger than RTI.
- It imposes heavy penalties (up to ₹250 crore) for wrong disclosure, creating fear among Public Information Officers (PIOs). Since most records are now digital, PIOs may prefer to reject applications to avoid risk of punishment.
- This may change RTI to Right to Deny Information.

- Example: Sharing details of pension beneficiaries to combat “ghost employees” and “ghost cards” will cease. Even a simple order signed by an official could be denied as “personal information”. It can result in over 90% of information being denied.
- Corruption will find safe cover. Details of ghost employees, fraud in welfare schemes, or charges of misconduct can all be classified as “personal information”, making it easy for corruption to continue without exposure.
- Though the RTI Act still has a clause that allows disclosure if “larger public interest” is served, in practice this is rarely used. Citizens should not have to prove larger public interest to access what is already their fundamental right.
- In reality, less than 1% of decisions apply this “larger public interest” exception. Officers usually avoid it because it is hard to weigh private harm against public benefit. This makes the safeguard almost useless after the amendment.
- RTI is part of the right to freedom of speech and expression under **Article 19(1)(a)**. Restricting it without proportional safeguards is unconstitutional.

Way Forward

- Media and citizens must actively engage through public discussions, debates, and awareness drives to show how the amendment weakens democracy.
- Political parties should be pressured to commit in their manifestos that the amendment will be reversed.
- Civil society groups and RTI activists need to strengthen public opinion by mobilising grassroots campaigns.
- The amendment can be challenged in courts, as its constitutionality can be tested against Articles 19(1)(a) and 21.
- Laws must be balanced so that data protection safeguards individual privacy without becoming a shield for the state to hide information.



Consequences

- These amendments are harmful for public accountability and the fight against corruption.
- Citizens are the best watchdogs against corruption. If they are denied information, this natural monitoring mechanism is lost.
- With the wider meaning of “personal information”, even basic and important documents can be withheld.

The RTI Act transformed governance by making secrecy the exception and disclosure the norm. The DPDP-led amendment to Section 8(1)(j) threatens to reverse this ethos, replacing transparency with opacity. If unchecked, this could cripple one of India's most powerful democratic tools against corruption and abuse of power.

RED IVY PLANT

Researchers at the Jawaharlal Nehru Tropical Botanic Garden & Research Institute (JNTBGRI), Thiruvananthapuram, have developed a wound-healing pad using the red ivy plant (*Strobilanthes alternata*), locally called murikooti pacha

Key points:

- **Active Ingredient:** A new molecule, acteoside, isolated from red ivy, is effective even at low concentrations (0.2%).
- **Technology:** Multi-layered pad created using electro-spun nanofiber.
- **Features:** Ultra-thin, biodegradable, non-toxic, FDA-approved polymers, with added neomycin sulfate.
- **Function:** Porous nanofiber structure enables gas exchange, aiding faster healing.
- **Background:** Builds on the plant's traditional use for treating cuts and wounds.



Red Ivy Plant (*Strobilanthes alternata*)

- A medicinal plant commonly found in Kerala and other tropical regions.
- Locally known as murikooti pacha.
- Traditionally used in folk medicine for treating cuts, wounds, and skin ailments.
- Leaves are reddish-purple, giving the plant its "red ivy" name.
- Rich in bioactive compounds such as acteoside, known for antimicrobial, anti-inflammatory, and wound-healing properties.
- Recently studied by JNTBGRI scientists for developing advanced biodegradable wound-healing pads.

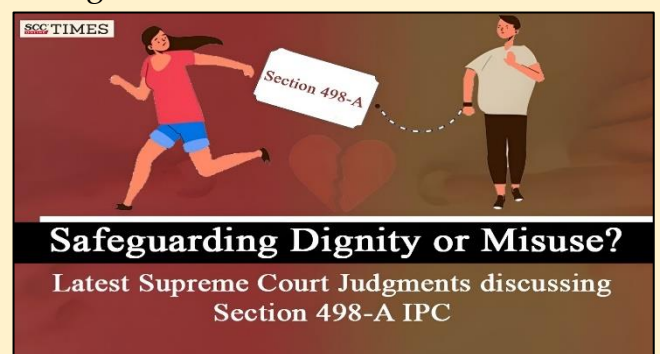
SECTION 498A OF THE INDIAN PENAL CODE

The Supreme Court of India, in the 2025 case of Shivangi Bansal vs Sahib Bansal, reaffirmed guidelines set by the Allahabad High Court to curb misuse of Section 498A of the Indian Penal Code.

These guidelines include a two-month 'cooling period' before any coercive action and referral of complaints to a Family Welfare Committee (FWC). The ruling has stirred debate over victims' timely access to justice and the autonomy of criminal justice agencies.

Background

Section 498A was enacted to address cruelty against women by husbands or their families. It aims to protect women from harassment and abuse in matrimonial settings. However, courts have noted increasing misuse of this provision to file false complaints and cause wrongful arrests.



Judicial Safeguards Against Misuse

The Supreme Court has introduced multiple safeguards. In Lalita Kumari, it mandated preliminary inquiry before registering FIRs in matrimonial disputes.

The 2008 amendment to the Code of Criminal Procedure added the 'principle of necessity' for arrests. The Arnesh Kumar judgment (2014) introduced a checklist and notice requirements before arrest. Later, Satender Kumar Antil (2022) strengthened bail protections for wrongful arrests.

Impact on Arrests and Crime Data

Data from the National Crime Record Bureau shows Section 498A offences rose from 113,403 in 2015 to 140,019 in 2022. Arrests declined from 187,067 to 145,095 during the same period.

This indicates judicial and legislative measures helped reduce arbitrary arrests while balancing victims' rights.

Controversy Over the 'Cooling Period' and FWCs

The Allahabad High Court's introduction of a two-month 'cooling period' and referral to FWCs aims to prevent hasty arrests and encourage mediation.

However, critics argue this delays justice for victims and undermines criminal justice autonomy. Similar directions in Rajesh Sharma (2017) were overturned by the Supreme Court in 2018 after public backlash.

Judicial Experimentalism

The introduction of FWCs and cooling periods is seen as judicial overreach. These steps are not backed by statute and interfere with police and magistrate functions. Past experience shows such experimental directions face societal resistance and risk rollback.

Need for Reconsideration

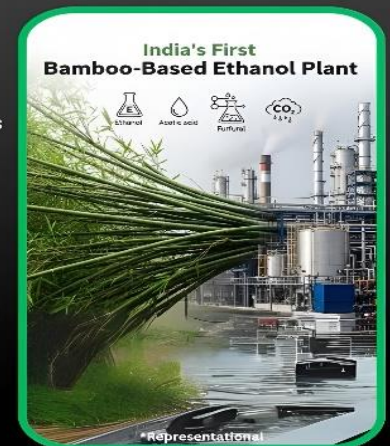
Given existing checks against misuse, the recent ruling may unnecessarily hinder

victims' access to justice. It is important for the Supreme Court to reassess the balance between protecting the innocent and ensuring timely redressal for genuine complaints.

INDIA'S FIRST BAMBOO-BASED BIOETHANOL PLANT

Key Details

Reports says, NRL has set up a supply chain with farmers and bamboo-chipping units across Arunachal Pradesh, Assam, and Meghalaya. Farmers receive ₹65-70 per bamboo pole. NRL also distributed saplings free of cost, grown via tissue culture by start-ups.



INDIA'S FIRST BAMBOO-BASED ETHANOL PLANT IN ASSAM HARNESSSES NORTH EAST'S FINEST BAMBOO

India recently inaugurated its first bamboo-based bioethanol plant in Golaghat, Assam. This milestone marks boost to the country's green energy ambitions and industrial growth.

The plant will source bamboo from Assam and northeastern states, benefiting farmers and tribal communities. Alongside, a polypropylene plant foundation was laid to strengthen regional manufacturing. These developments reflect India's shift towards renewable energy and self-reliance.

Significance

Bioethanol is a renewable, high-octane biofuel produced from biomass such as bamboo, sugarcane, and grains. Bamboo offers a sustainable raw material due to its fast growth and wide availability in the Northeast.

The new plant will process about 5 lakh tonnes of bamboo annually. This development supports India's goal to reduce dependence on fossil fuels and promote cleaner energy sources.

Policy Changes Supporting Bamboo Use

Bamboo was earlier classified as a tree under the Indian Forest Act, 1927, restricting its harvest. Recent amendments have removed this classification, lifting the ban on cutting bamboo.

This policy shift empowers local farmers and forest communities to cultivate and sell bamboo legally. It also aligns with the government's vision to promote rural livelihoods and sustainable resource use.

Economic and Social Impact

The bamboo ethanol plant is expected to inject Rs 200 crore into Assam's rural economy. It creates new income avenues for farmers and tribal groups involved in bamboo cultivation. The project supports 'Make in Assam' and 'Make in India' initiatives by spurring local manufacturing and industrial growth. The polypropylene plant will further expand industrial opportunities by producing essential plastic raw materials.

Bioethanol Production Process

Bioethanol production involves fermentation of sugars derived from biomass. The process includes pretreatment of raw material to release fermentable sugars, fermentation by microbes, distillation, and dehydration to obtain fuel-grade ethanol.

This ethanol can be blended with petrol or used in modified engines. Bamboo's cellulose content makes it a viable feedstock for this biofuel.

India's Renewable Energy Progress

India has rapidly advanced in renewable energy over the past decade. It now ranks among the top five countries in solar power generation. The bamboo ethanol plant exemplifies diversification into alternative fuels beyond solar and wind. This aligns with national goals for energy security, environmental sustainability, and rural development.

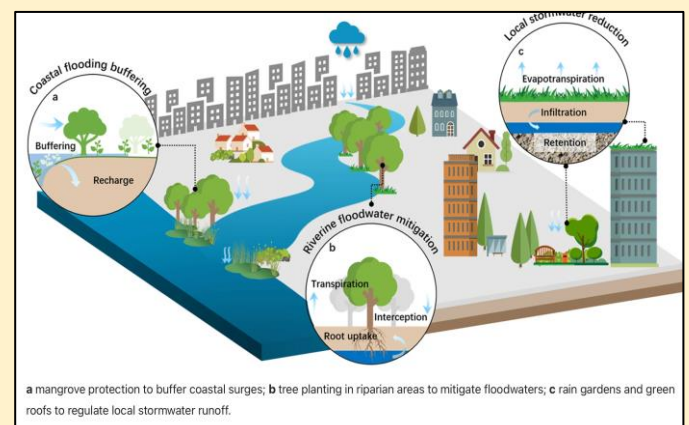
TACKLING URBAN FLOODS

Northern States are seeing heavy flooding even in September, with all of Punjab's 23 districts being hit by floods. Delhi and Gurugram have been inundated by intense rains, and Uttarakhand and Himachal Pradesh are experiencing frequent cloudbursts. In the east, Kolkata is facing torrential rains.

These all examples highlight that Indian cities are still designed for an older predictable climate that no longer exists

Key trends

- Heavy rains now occur earlier and later than traditional monsoon months.
- In May, Mumbai recorded 135.4 mm of rainfall in just 24 hours, followed by 161.9 mm the next day. Delhi recorded 81 mm fall within a few hours on the same day, overwhelming the drainage systems.
- According to the Council on Energy, Environment and Water 64% of Indian tehsils have witnessed a rise in heavy rainfall days (by 1-15 days), especially in Maharashtra, Tamil Nadu, Gujarat, and Karnataka.
- CEEW's analysis of daily rainfall from 1970 to 2021 in the coastal city of Thane shows that one-hour rainfall now reaches 50 mm once every two years, and about 80 mm per hour once every 50 years.
- Floods cause the highest loss of life and property among natural disasters, with a single flood causing damages of around ₹8,700 crore.



Gaps in urban flood management

- **Calendar-Driven Planning:** Urban flood management still relies on **fixed monsoon schedules**, with drain cleaning and desilting planned for June, even though rain now arrives earlier, later, and with higher intensity. This gap leaves cities unprepared for unseasonal downpours.
- **Intense, Short-Duration Rain:** Rainfall is increasingly **compressed into a few hours**, overwhelming drainage systems built for slower, steady rain and causing rapid flooding.
- **Outdated Preparedness:** Pre-monsoon cleaning and emergency drills follow **old timelines** instead of real-time rainfall data, while hourly trends are rarely factored into infrastructure design.
- **Slow Climate Adaptation:** Cities have been **slow to update** rainfall-intensity data and drainage standards, keeping storm water systems under-designed for today's extreme weather.

Steps Needed

- Integrate **sub-daily rainfall analysis** into monsoon planning to account for short, high-intensity rain events and guide both drainage design and real-time operations.
- Use **real-time rainfall data** to inform citizens and strengthen infrastructure, as seen in Mumbai where drains were widened to handle up to 120 mm rain per hour.
- Acknowledge that seasonal rainfall is increasingly compressed into intense bursts, and design systems to withstand **hourly extremes** rather than relying only on seasonal averages.
- Align **storm water drain cleaning with solid waste management**, ensuring schedules are coordinated so that garbage does not relog freshly cleared drains.
- Activate **joint sanitation drives and inspections** based on IMD alerts, taking cues from Vijayawada's monsoon response teams that integrate multiple departments.

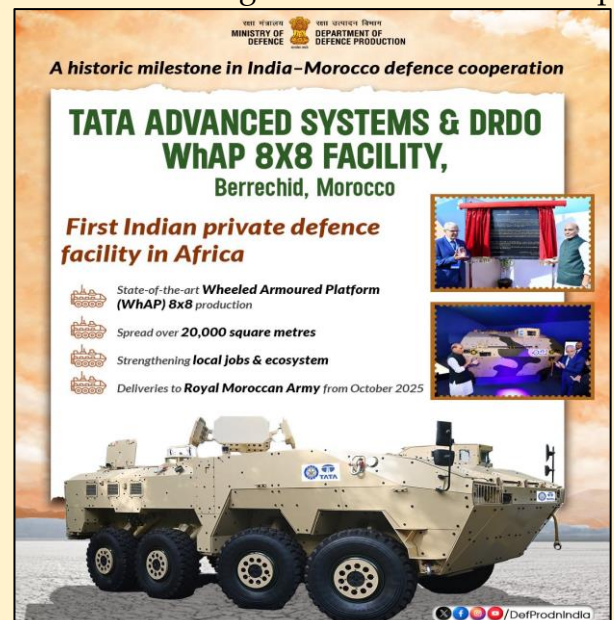
- Regularly update **Intensity–Duration–Frequency (IDF) curves** every 5–10 years so drainage systems reflect evolving rainfall patterns and volumes.
- Design drainage networks using **micro-catchment hydrology and topography**, and ensure storm water systems are kept separate from sewerage to avoid overload and improve efficiency.

Urban floods are not caused by rain alone but by outdated planning. Cities must shift from seasonal calendars to rainfall-pattern readiness, ensuring infrastructure and operations are agile enough to handle the rain that is already falling.

INDIA'S FIRST OVERSEAS DEFENCE MANUFACTURING FACILITY

India has launched its first overseas defence manufacturing facility in Morocco, led by Tata Advanced Systems Limited (TASL).

- Defence Minister Rajnath Singh and his Moroccan counterpart inaugurated TASL's first overseas defence plant in Berrechid, Morocco (20,000 sq. m).
- The facility will manufacture the indigenously developed WhAP 8x8 (by TASL and DRDO).
- Project aligns with India's "Make with Friends" and "Make for the World" vision. It will generate local jobs, sourcing one-third of components locally, to rise to 50% in future.
- Aims to make Morocco a strategic defence manufacturing hub for Africa and Europe.



Indian Overseas Defence Facilities

- **Farkhor Air Base, Tajikistan:** Often regarded as India's first overseas base. India has had an arrangement with Tajikistan for operating/supporting this base, mainly for strategic depth in Central Asia.
- **Ayni (Gissar) Air Base, Tajikistan:** Renovated and upgraded by India with extended runway, air traffic control and defence infrastructure. It can host IAF aircraft during contingencies, though full operational rights remain limited.
- **IMTRAT, Bhutan:** The Indian Military Training Team trains Bhutanese armed forces. It is one of India's longest-standing overseas defence missions.
- **Listening / Surveillance Posts:** India is reported to maintain radar or surveillance facilities in parts of the Indian Ocean Region, such as Madagascar, to monitor maritime traffic and enhance domain awareness.

OJU HYDROELECTRIC PROJECT

Union Environment Ministry's expert committee has given clearance to the 2,200 MW Oju Hydroelectric Project on the Subansiri river in Arunachal Pradesh, near the China border.

- **Location & Project Details**
 - Proposed on the Subansiri river in Upper Subansiri district, Arunachal Pradesh.
 - Close to the China border; part of India's border infrastructure push.
 - To be developed by Oju Subansiri Hydro Power Corporation Pvt. Ltd.
- **Technical Features**
 - Installed capacity: 2,200 MW.
 - Dam type & height: Gravity dam, 120 m high.
 - Reservoir: Submergence area of 434 hectares forest land (total diversion of ~750 hectares forest).
 - Annual design energy: ~7,934 million units.
 - Displacement: Only nine families affected.

- **Strategic & Development Significance**
 - One of India's largest hydroelectric projects.
 - Strengthens infrastructure in Northeast, especially near the China border.
 - Boosts India's renewable energy capacity.
- **Concerns & Criticism**
 - The Cumulative Impact Assessment (CIA) and Carrying Capacity Study (CCS) of the Subansiri basin were done in 2014, now considered outdated.
 - Critics warn of landslides, dam-break scenarios, flash floods, and ecological impacts in the fragile Himalayan terrain.
 - Environmentalists argue that the approval process did not sufficiently update scientific studies before clearance.



- Also called the **Gold River**, it is the largest tributary of the Brahmaputra, about **518 km long** with a **32,640 sq. km basin**.
- It originates in **Lhuntse County, Tibet**, flows through **Upper Subansiri district (Arunachal Pradesh)**, and enters India via the **Miri Hills**.
- The **Upper Subansiri** refers to its Himalayan origin stretch, while the **Lower Subansiri** marks its descent into the Assam Valley through Lower Subansiri district.
- It joins the **Brahmaputra at Jamurighat/Majuli Island in Assam**, key tributaries are **Rangandi, Dikrong, Kamle, Char Chu, and Tsari Chu**.

Subansiri River – Overview

- **Origin:** Rises in the Tibet Plateau (China), where it is known as the *Chayul Chu*.

- **Course:** Flows east and south-east through Tibet, then enters Arunachal Pradesh (India) near Taksing, before flowing into Assam, where it joins the Brahmaputra River at Lakhimpur district.
- **Significance:** Largest tributary of the Brahmaputra, draining a major part of the Eastern Himalayas.

Tributaries of Subansiri

- **Right-bank tributaries:** Kamla, Kurung, Panior, Ranga Nadi.
- **Left-bank tributaries:** Panyor, Dikrong, Pare.
- Collectively these streams drain the Upper Subansiri basin and feed the main Subansiri channel before it meets the Brahmaputra.

Hydroelectric Projects on Subansiri

1. Lower Subansiri Hydroelectric Project (2000 MW)

- Located at Gerukamukh (on Assam–Arunachal border).
- Being developed by NHPC.
- India's largest hydroelectric project under construction, but facing delays due to environmental and safety concerns.

2. Upper Subansiri Projects

Includes projects like Oju (2200 MW), Niare, Naba, Nalo, Denger, and others.

- Together, they form a series of cascade hydropower projects planned to harness the river's steep gradient in Arunachal Pradesh.

3. Oju Subansiri Hydroelectric Project (2200 MW)

- Recently given environmental clearance (Sept 2025).
- Located near Taksing in Upper Subansiri, close to the China border.
- To be developed by Oju Subansiri Hydro Power Corporation Pvt. Ltd.

2025 PN7

Astronomers have discovered a new asteroid, 2025 PN7, which follows an orbit similar to Earth's and is classified as a quasi-moon.

Quasi-moons and mini-moons are small celestial objects that temporarily accompany Earth in its orbit. The newly observed quasi-moon, 2025 PN7, spotted this summer, could be the smallest of its kind at under 52 feet.

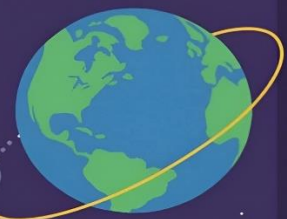
Such objects often originate from the asteroid belt between Mars and Jupiter or as debris from the Moon. Unlike permanent moons, they are temporary companions, staying for decades before drifting away.

Earth's Hidden Quasi-Moon: 60 Years with Us!

Meet 2025 PN7, our newly discovered quasi-moon!

It's not a real moon. Instead, this little asteroid, only about 19 meters wide, travels around the Sun almost exactly in Earth's path.

From our point of view, it looks like it's tagging along with us.



2025 PN7

Astronomers using the Pan-STARRS1 telescope in Hawaii first spotted it in August 2025.

It's super faint—so faint you'd never see it without powerful telescopes. PN7 has actually been keeping us company for nearly 60 years, and it's likely to stick around for another 60 before drifting away.

Earth has had similar followers before, with quasi-moons providing opportunities for research and possible future space missions.

Quasi-moons and Mini-moons:

• Mini-moons:

- Small natural objects that temporarily orbit Earth.
- Unlike the permanent Moon, they are short-term companions, often staying a few months to years.

- Many are captured asteroids or chunks of the Moon ejected after meteorite impacts.
- Example: 2006 RH120, a mini-moon that orbited Earth for about a year.
- **Quasi-moons:**
 - Objects that orbit the Sun, but follow a path very similar to Earth's orbit, appearing like companions.
 - They are not true satellites but remain in Earth's vicinity for decades in a stable gravitational "dance."
 - Example: 2025 PN7 (recently spotted), 469219 Kamo'oalewa (discovered in 2016).
 - They maintain a constant average distance from Earth, often staying in a resonant orbital pattern.
- **Significance:**
 - Both are temporary companions of Earth.
 - Useful for scientific studies, space missions, and potential resource exploration, as they are relatively close and easier to reach than main-belt asteroids.

NEW START NUCLEAR ARMS CONTROL TREATY

Context Russia has proposed a one-year extension to the New START nuclear arms control treaty with the US, set to expire in February 2026.

President Vladimir Putin offered the US a one-year extension of the New START treaty, the last remaining nuclear arms pact between the two nations, which limits each side to 1,550 deployed strategic nuclear warheads.

Russia said it is willing to continue adhering to the treaty while negotiations proceed, but warned that the offer is conditional on the US not imposing unilateral conditions or undermining Russia's defense capabilities.

The move comes amid heightened US-Russia tensions, particularly over Ukraine, and growing global concerns about arms control.

Major nuclear treaties between USA and Russia

Nuclear Non-Proliferation Treaty (NPT), 1968

- Not bilateral, but both USA and USSR were key signatories.
- Aimed to prevent spread of nuclear weapons, promote peaceful use of nuclear energy, and work toward disarmament.

Strategic Arms Limitation Talks (SALT I & II)

- **SALT I (1972):** Limited the number of Intercontinental Ballistic Missiles (ICBMs) and Submarine-Launched Ballistic Missiles (SLBMs). Also led to Anti-Ballistic Missile (ABM) Treaty restricting missile defense systems.
- **SALT II (1979):** Proposed limits on nuclear delivery systems, but never formally ratified due to the Soviet invasion of Afghanistan. However, both sides largely adhered to it informally.

Intermediate-Range Nuclear Forces (INF) Treaty, 1987

- Signed by Reagan (US) and Gorbachev (USSR).
- Eliminated all land-based missiles with ranges between 500–5,500 km.
- First treaty to eliminate an entire category of nuclear weapons.
- The US withdrew in 2019, citing Russian violations.

Strategic Arms Reduction Treaties (START I & II)

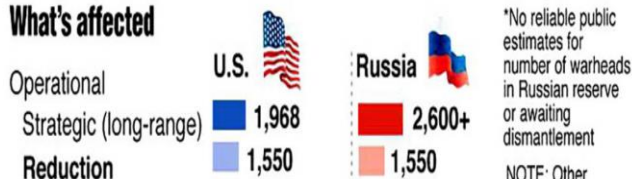
- **START I (1991):** Reduced deployed strategic nuclear warheads to 6,000 on each side.
- **START II (1993):** Banned multiple warheads (MIRVs) on ICBMs but never entered into force.

Strategic Offensive Reductions Treaty (SORT) / Moscow Treaty, 2002.

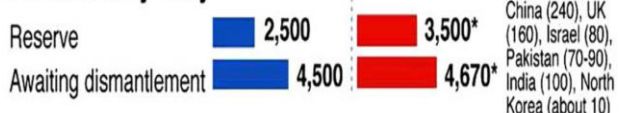
New START arms treaty

The U.S. Senate has ratified the new START treaty to reduce deployed strategic warheads by about 30 percent. The treaty must now be ratified by the Russian Duma; current stockpiles and reductions under the treaty:

What's affected



Not affected by treaty



Treaty would also

- Revive on-the-ground arsenal inspections
- Limit missiles, bombers, launchers capable of carrying nuclear warheads

Source: Arms Control Association

- Signed by Bush (US) and Putin (Russia).
- Limited operationally deployed warheads to 1,700–2,200.

New START Treaty, 2010

- Signed by Obama (US) and Medvedev (Russia).
- Limits deployed strategic warheads to 1,550 and delivery systems to 700.
- Set to expire in February 2026 after a 5-year extension agreed in 2021.
- Currently the last remaining nuclear arms control treaty between the two powers.

Significance:

- These treaties helped reduce Cold War tensions and massive nuclear stockpiles.
- However, with the collapse of the INF Treaty and expiry of New START looming, the future of nuclear arms control is uncertain.

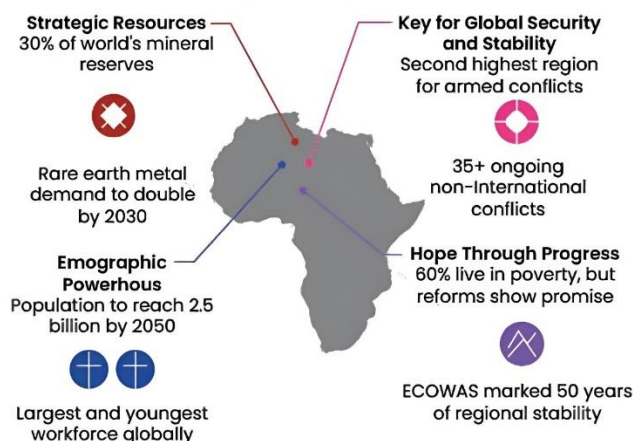
INDIA'S DIGITAL TRANSFORMATION - LEADING THE WAY

India's Digital India initiative, launched in 2015, marked a strategic effort to transform the country's digital ecosystem, enhance governance, and ensure inclusive socio-economic development.

Over the past decade, it has expanded internet access, improved service delivery, and strengthened India's digital economy.

As most African nations are poised for digital transformation, the Indian experience could offer them a cost-effective and contextually relevant model.

Why Africa Will Become a Prominent Player in Global Geopolitics



Africa: The Emerging Continental Power

India's Digital transformation data

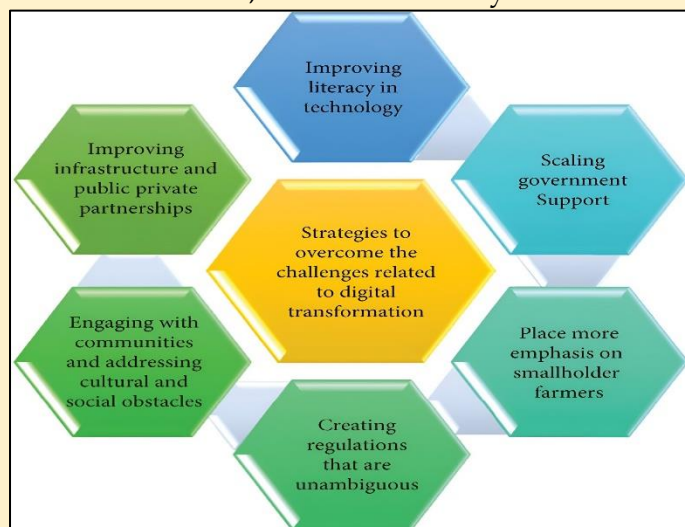
- Internet users increased from 251 million in 2014 to nearly 970 million in 2024.
- Over 2,18,000 villages connected with high-speed networks.
- Digital infrastructure enabled telemedicine, tele-education, and e-governance services at scale.
- Contributes approximately USD 200 billion annually; 11.74% of India's GDP (2022–23).
- Key sectors benefiting include fintech, e-commerce, health-tech, and agri-tech.

Africa Digital Economy

- Internet penetration increased from 2.1 per cent in 2005 to approximately 38 per cent in 2024.
- In 2023, the mobile industry contributed \$140 billion, or 7 per cent, to the GDP of the region, a number which is expected to grow to \$170 billion by 2030.
- The continent has also established itself as a leader in mobile financial services, with half of the world's mobile money providers based in sub-Saharan Africa.

Challenges

- Low internet penetration and limited broadband connectivity in rural and remote areas.
- Inadequate digital infrastructure, including data centers, reliable electricity, and network coverage.
- High cost of digital devices and internet services, limiting accessibility for marginalized populations.
- Fragmented and underdeveloped regulatory and policy frameworks for digital governance.
- Shortage of skilled workforce in ICT, data science, AI, and other emerging digital technologies.
- Weak cybersecurity frameworks and limited awareness of online safety and data protection.
- Insufficient integration of digital solutions with public service delivery, healthcare, and education systems.



India-Africa digital initiatives

- **India-Africa Forum Summit (IAFS)** facilitating dialogue, Lines of Credit (LoCs), grants, and technical support for digital projects.
- In 2009, India launched the **Pan Africa e-Network**, a continent-wide initiative facilitating tele-education and telemedicine services. Building upon this, the **e-VidyaBharti (Tele-education) and e-ArogyaBharti (Tele-medicine) project (e-VBAB)** was initiated in 2019 to further integrate African students and patients with Indian academic and medical institutions.
- Under the **e-VBAB scheme**, in the last few years, thousands of scholarships have been offered to African students for higher education in Indian universities.
- India has established **IT Centres in Kenya, Botswana, Uganda, Tanzania, and Ghana** to promote digital skills.
- **Established cyber Tower in Mauritius** to strengthen ICT infrastructure and training capabilities.
- **Established Kofi Annan Centre of Excellence in ICT, Ghana**, supporting ICT skill development.
- **Established Centre of Excellence in Information Technology at Al Azhar University, Egypt**, promoting digital skills among youth.
- **Established Overseas IIT campus in Zanzibar, Tanzania (2023)** offering advanced programs in Data Science and Artificial Intelligence.
- **Xtelify, Bharti Airtel's subsidiary**, signed a multi-year, multi-million-dollar deal with Nigeria to deploy AI-powered platforms, boosting telecom infrastructure, operational efficiency, and customer service across 14 African countries.
- **Promotion of Indian start-ups** in fintech, health-tech, and agri-tech to collaborate with African enterprises.
- Organising **Study tours** by African delegations to learn India's digital payments and public distribution system models.

- Sharing **India's Aadhaar digital identity system** as a model for inclusive governance and financial inclusion.
- With a median age of approximately 19 years, Africa possesses the youngest population globally. However, to harness this demographic advantage, substantial investment in digital skill development would be required. Hence, promoted **Skill development programs** inspired by India's Skill India, Digital Saksharta Abhiyan, and ITEC for vocational training and digital literacy.

Way forward

- Strengthen India-Africa collaboration to promote inclusive development and mutual capacity-building.
- Leverage joint technological expertise to support Africa's digital infrastructure and governance systems.
- Foster South-South cooperation in the context of the Fourth Industrial Revolution.
- Encourage policy frameworks that are flexible, scalable, and adaptable to local contexts.
- Promote strategic partnerships between governments, educational institutions, and the private sector to drive innovation.

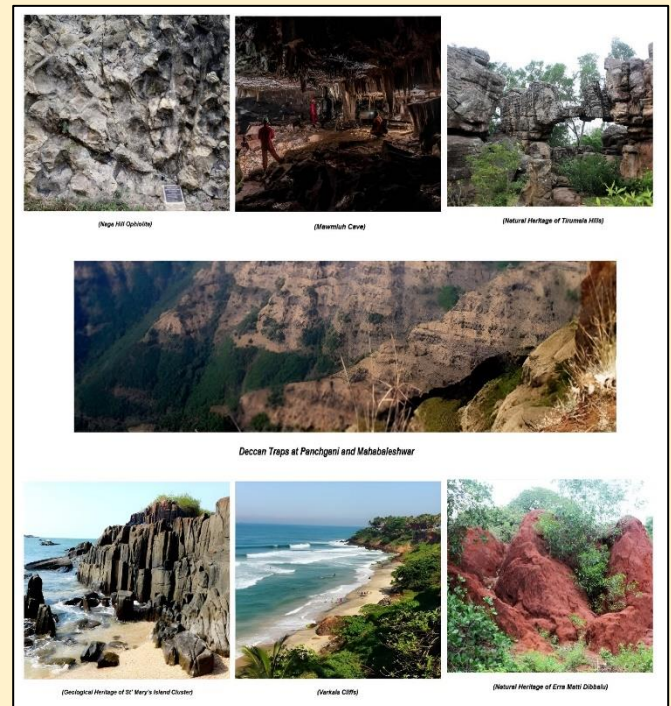
India's successful deployment of digital technologies for inclusive governance provides a replicable model for African nations. With strong political will, flexible policy frameworks, and strategic cooperation, India and Africa are well-placed to co-create a future where digital innovation drives socio-economic progress across the Global South.

UNESCO HERITAGE SITES

In September 2025, seven new natural heritage sites from India were added to UNESCO's Tentative List, taking the total to 69 properties (49 cultural, 17 natural, 3 mixed).

Newly Added Sites:

- Deccan Traps at Panchgani and Mahabaleshwar, Maharashtra
- St. Mary's Island Cluster, Karnataka
- Meghalayan Age Caves, Meghalaya
- Naga Hill Ophiolite, Nagaland
- Erra Matti Dibbalu (Red Sand Hills), Andhra Pradesh
- Tirumala Hills, Andhra Pradesh
- Varkala Cliffs, Kerala



Significance:

- Highlights India's commitment to preserving geological and ecological diversity.
- Represents a shift from focusing only on biodiversity to geological heritage and key Earth epochs.
- Sites include ancient volcanic regions, coastal formations, and significant caves with scientific and tourism value.
- Entry on the tentative list is the first step toward full UNESCO World Heritage status, promoting protection, sustainable development, and geotourism.

Administration:

- The Archaeological Survey of India (ASI) compiles and submits these nominations, reinforcing India's role in global heritage preservation.

Sites	Key Features
 Natural Heritage of Erra Matti Dibbalu or Red Sand Dunes (Visakhapatnam, Andhra Pradesh)	- First documented in 1886 by British geologist William King - Represent unique coastal geomorphological and paleo-climatic set up - Declared a GeoHeritage Monument by the Geological Survey of India (GSI) in 2016. - Composed of sand, silt, and clay with a reddish color from natural oxidation.
 Meghalayan Age Caves (Meghalaya)	- They are some of the world's longest caves and host impressive stalactites, stalagmites, fossils, and rare cave-dwelling species. Mawmluh cave is listed among the global first 100 geologically important sites in the world.
 Natural Heritage of Tirumala Hills (Tirupati, Andhra Pradesh)	The hills form part of the Seshachalam Biosphere Reserve and Venkateswara National Park
 Natural Heritage of Varkala (Kerala)	Varkala coast is noted for its scenic beauty, unique laterite formations, fossil-bearing rocks, and cultural significance as a pilgrimage destination.
 Deccan Traps at Panchgani and Mahabaleshwar	Location: Western Ghats of Maharashtra. - They form a part of Keyna Wildlife Sanctuary.
 Geological Heritage of St. Mary's Island Cluster (Karnataka)	The sites are protected by the coastal regulation zones of the government of India and have been declared as National Geological Monument by GSI.
 Naga Hill Ophiolite (Nagaland)	This belt displays a section of oceanic crust and mantle thrust onto land, offering crucial evidence of tectonic plate movement and earth's internal processes.

UNESCO World Heritage Sites (WHS)

- **Definition:** Sites recognized by UNESCO for their cultural, natural, or mixed significance of outstanding universal value to humanity.
- Categories:
 1. **Cultural Sites** – Monuments, architectural works, or urban settlements (e.g., Taj Mahal, Jaipur City).
 2. **Natural Sites** – Natural landscapes, ecosystems, or geological formations (e.g., Sundarbans, Western Ghats).
 3. **Mixed Sites** – Sites with both cultural and natural importance (e.g., Khangchendzonga National Park).

India's WHS:

- As of 2025, India has 42 World Heritage Sites: 29 cultural, 12 natural, 1 mixed.
- Additionally, 69 sites are on the Tentative List, the first step toward nomination.

Significance:

- Ensures protection, conservation, and global recognition.
- Promotes sustainable tourism, education, and research.
- Helps safeguard heritage for future generations.

Administration:

- In India, the Archaeological Survey of India (ASI) and the Ministry of Culture manage nominations and site protection.

UNESCO Criteria: Sites are evaluated based on ten criteria, six cultural and four natural, emphasizing outstanding universal value.

NE-SPARKS PROGRAMME.

Union Minister of Development of North Eastern Region, Jyotiraditya M. Scindia, virtually interacted with students from the North East who visited ISRO headquarters under the NE-SPARKS programme.

The initiative aims to nurture scientific curiosity among youth from all eight North Eastern states by exposing them to India's space technology.

Nearly 400 meritorious students in four batches have participated so far, with the Minister encouraging them to pursue careers in STEM and highlighting the government's commitment to empowering the region's youth.

NE-SPARKS Programme

- **Full form:** *North East Students' Programme for Awareness, Reach, and Knowledge on Space.*
- **Launched by:** Ministry of Development of North Eastern Region (DoNER) in collaboration with ISRO.
- **Objective:** To nurture scientific curiosity and inspire youth from all eight North Eastern states by giving them exposure to India's space research and technology.

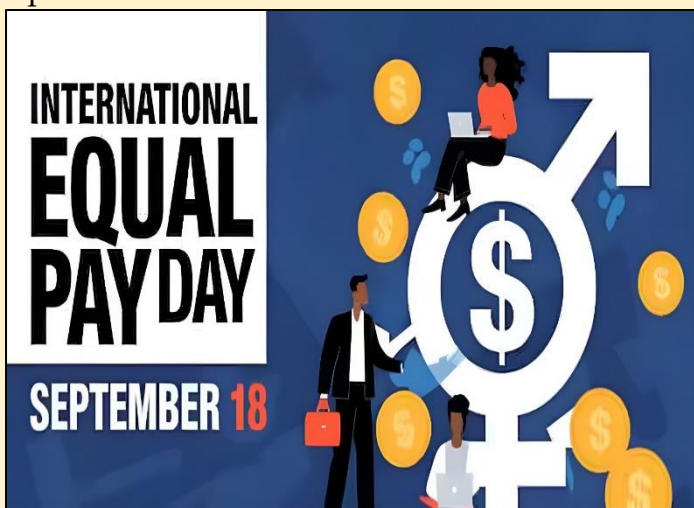


- **Features:**
 - Meritorious students from the region visit ISRO facilities.
 - Hands-on exposure to cutting-edge space science, satellite technology, and research activities.
 - Interaction with scientists to encourage STEM career choices.
- **Progress:** Nearly 400 students across four batches have already participated.
- **Significance:** Enhances scientific temperament, bridges regional gaps in science education, and empowers the North Eastern youth by connecting them directly with national scientific institutions.

INTERNATIONAL EQUAL PAY DAY

September 18 was first marked as International Equal Pay Day by the United Nations General Assembly in 2019, following the efforts of the Equal Pay International Coalition (EPIC), which is led by the International Labour Organisation (ILO), UN Women, and the Organisation for Economic Co-operation and Development (OECD).

The day underscores that equal pay is not merely a legal principle but a tangible right that must be reflected in paychecks. It calls on governments, employers, and societies to ensure fairness in compensation for work of equal value.



What does equal pay mean?

- **Equal pay for equal work** means that individuals performing the same or equivalent tasks must receive the same remuneration, regardless of gender or other identities.
- It represents fairness and justice in workplaces, where skill, effort, and responsibility – not gender – determine earnings.

Global pay gap

- The **Global Gender Gap Report 2025** by the World Economic Forum reveals that only 68.8% of the overall gender gap has been closed, leaving over 30% of inequality still unresolved.
- At the present rate, it would take around 123 years to achieve full parity in pay and opportunities worldwide.

European Union:

- In the European Union, women in 2021 earned on average 12.7% less per hour than men, and by 2023 the gap narrowed slightly to around 12.0%, showing only marginal improvement despite decades of policy efforts.

United States

- In the United States, women earned roughly 85 cents for every dollar earned by men in 2024, with Pew Research noting only minor changes in the last twenty years.
- Among younger workers (ages 25–34), the difference is smaller, with women earning about 95 cents to the male dollar, but the gap widens as age increases, reflecting slower career growth for women over time.

Australia:

- Australia's Workplace Gender Equality Agency (2025) reported that women continue to earn significantly less than men, keeping the gender pay gap a key issue in national policy debates.

Regional variations highlight contrasting trends:

- **Iceland** leads the world with 92.6% of its gender gap closed, maintaining the top position for 16 consecutive years.
- **Nordic nations** such as **Finland, Norway, and Sweden** also score high due to robust equality laws and family-friendly welfare policies.
- Belgium reports one of the lowest pay gaps globally at only 1.1%, while Luxembourg has slightly reversed the trend with women earning about 0.7% more than men.
- At the other extreme, **South Korea** records the highest pay gap among OECD countries, with women earning 31.2% less than men, reflecting structural and cultural barriers to workplace equality.

Status in India

- India ranks 131 out of 148 countries in the Global Gender Gap Report 2025, slipping from 129 in 2024.
- Overall gender parity score: 64.1%, far below the global average.
- Education parity: High levels achieved in school enrolment and literacy.
- Economic participation: Alarming low at 40.7%, with women underrepresented in leadership and earning less for similar work.

The data underscores that while some regions demonstrate near parity, global progress remains slow, requiring stronger legal safeguards, cultural change, and transparent pay structures to close the remaining gap.

Why Pay Gaps Exist

- **Occupational segregation** places women in lower-paying sectors like teaching, caregiving, or social services, while men dominate higher-paying fields such as engineering, finance, and technology.
- **Career interruptions** for caregiving responsibilities—whether for children or elderly parents—slow women's

earning growth and limit promotions, while men often experience uninterrupted career progression.

- **Leadership underrepresentation** keeps fewer women in senior managerial or CXO-level roles, where salaries are significantly higher and decision-making power greater.
- **Pay secrecy** allows discrimination to persist; studies show that organisations with transparent salary ranges tend to have smaller gender pay gaps.
- **Cultural and systemic biases** influence hiring, promotion, and performance evaluations, creating barriers that perpetuate unequal pay even within the same company or field.

Implications

- The gender pay gap affects not just salaries but also savings, pensions, and long-term financial independence, leaving women with less security in retirement.
- Midlife women, particularly those in their 40s, often have smaller retirement funds and may need to rely on family support or government assistance.
- Lower earnings reduce investment capacity, limiting wealth accumulation over time and widening economic inequality.
- Family income is directly impacted, especially in single-parent or one-income households, making it harder to meet education, healthcare, and lifestyle needs.
- Wage inequality lowers overall productivity, as women's skills and potential remain underutilised in the workforce.
- The International Labour Organisation (ILO) estimates that closing the gap could add trillions of dollars to global GDP, making it an economic imperative as well as a social one.

Way Forward

- Implement pay transparency laws requiring companies to publish gender pay data, as seen in the EU, to expose

hidden wage gaps and drive corrective action.

- Strengthen legal safeguards by enacting and enforcing clear equal pay legislation, which has been shown to reduce disparities in countries with strong frameworks.
- Promote supportive workplace practices such as flexible schedules, affordable childcare, and parental leave to help women balance career growth with family responsibilities.
- Ensure corporate accountability through mandatory annual pay audits, public reporting, and internal review mechanisms to track and close wage gaps.
- Encourage skill development and leadership training programs like *She-Marches* to empower women with negotiation abilities, confidence, and career growth opportunities.
- Foster awareness and advocacy by using platforms like International Equal Pay Day to highlight data-driven evidence and keep public attention on wage inequality.

The gender pay gap persists worldwide, with women still earning 15–20% less than men for similar work. International Equal Pay Day reminds us that achieving equal pay is vital for fairness, economic growth, and social justice, demanding stronger laws, corporate accountability, and cultural change to make equality a reality.

GM CORN BAN

Recent tensions between India and the United States centre on corn trade. The U.S. demands India import American corn, but India remains largely self-sufficient. This dispute marks differences in agriculture, trade policy, and political interests in both countries.

India's Maize Production and Ethanol Use

India produces about 50 million tonnes of maize annually with yields below the global average. Despite this, India often meets its maize needs domestically and occasionally exports.

Maize is increasingly used for ethanol production, with 10 to 12 million tonnes expected to be diverted this year. This shift balances food security with energy goals, especially ethanol blending in petrol to reduce oil imports and carbon emissions.

India's Import Patterns and GM Crop Policy

India imports maize mainly from Myanmar and Ukraine, not the U.S. This is partly due to India's ban on genetically modified (GM) corn imports.

Only GM cotton is approved for cultivation, while GM brinjal and mustard remain under study. Public concerns about GM crop safety influence policy. India's maize imports have increased recently but remain limited and targeted at ethanol feedstock.



GM Corn Ban

- **Regulatory Prohibition:** India bans the import of genetically modified (GM) corn for both human and animal consumption under the Environment Protection Act and oversight by the Genetic Engineering Appraisal Committee (GEAC).
- **US Corn Profile:** Over 90% of US corn is genetically modified, making it incompatible with India's biosafety regulations and import norms.
- **Health and Ecological Concerns:** The ban is rooted in precautionary principles, citing potential risks to biodiversity, food safety, and long-term ecological balance.
- **Political Sensitivity:** A 2023 proposal to allow GM corn imports for ethanol was withdrawn due to backlash from farmer groups and political stakeholders, especially in maize-producing states like Bihar.
- **Trade Implications:** The GM ban remains a major hurdle in India-US agricultural trade, with India prioritizing food sovereignty and domestic farmer protection over external pressure.

U.S. Agricultural Structure and Export Motivations

U.S. farming is highly mechanised, capital-intensive, and focused on cash crops like corn and soybeans. The U.S. produces 350 million tonnes of corn annually, exporting about 45 million tonnes.

Corn supports industries including ethanol, animal feed, and processed foods. Overproduction drives the U.S. to seek export markets, including India's ethanol sector, to sustain agribusiness profits and political support.

Political Stakes in U.S. Corn Exports

Corn and soybean production dominate the U.S. Midwest, a Republican stronghold crucial to presidential primaries. The corn lobby wields influence on U.S. trade and farm policies.

Loss of the Chinese soybean market has intensified pressure to find alternative buyers. Exporting to India fits U.S. political and economic interests, despite India's reluctance to import GM corn.

India's Strategic Concerns and Domestic Impact

India fears that cheap U.S. corn imports could harm its domestic maize ecosystem and farmers, especially in politically sensitive states like Bihar.

The experience of Mexico post-NAFTA, where cheap U.S. corn devastated local farmers, serves as a cautionary tale. Importing corn feedstock for ethanol contradicts India's goals of energy self-reliance and reducing foreign exchange outflow.

Economic and Environmental Dimensions

Ethanol blending reduces India's oil import bill by up to \$10 billion annually and lowers carbon emissions. Using domestically grown maize supports farmers and rural economies. Relying on imports would undermine these benefits and weaken India's ethanol policy objectives.

ADI KARMAYOGI ABHIYAN

The Ministry of Tribal Affairs, in collaboration with the United Nations in India, launched the Adi Yuva Fellowship and the Adi Karmayogi Volunteers Programme in 2025. These initiatives form part of the Adi Karmayogi Abhiyan, the world's largest tribal grassroots leadership movement.

The campaign was inaugurated by Prime Minister Narendra Modi on 17 September 2025 during Janjatiya Gaurav Varsh (15 November 2024 – 15 November 2025).

It aims to engage 11 crore citizens across 100,000 tribal villages in 550 districts of 30 States and Union Territories. The Abhiyan promotes responsive and accountable governance rooted in citizen participation, supporting India's vision for Viksit Bharat 2047.

The Abhiyan focuses on transforming governance into a people's movement. It mobilises tribal communities to co-create development plans called Tribal Village Vision 2030 Action Plans.

These plans chart pathways for inclusive growth at the village level. The ongoing Adi Sewa Parv (17 September – 2 October 2025) facilitates collaboration between tribal members and government officials to implement these plans.

ADI KARMAYOGI

INDIA'S LARGEST TRIBAL LEADERSHIP MOVEMENT

7 Objectives of Adi Karmayogi Abhiyan:

- ✓ Promote transparent and accountable governance
- ✓ Encourage bottom-up planning and participation
- ✓ Set up proactive grievance and feedback systems
- ✓ Implement national and state schemes collaboratively
- ✓ Conduct local visioning aligned with Viksit Bharat @2047
- ✓ Build leadership from village to state level
- ✓ Ensure last-mile delivery through scheme convergence

Adi Yuva Fellowship – Empowering Tribal Youth

The Adi Yuva Fellowship is a pioneering programme designed to empower tribal youth through structured learning and mentorship. Supported by the United Nations in India, it offers a 12-month paid fellowship with a customised learning plan. Fellows gain knowledge, practical experience, and reflective practice.

Benefits include monthly allowances, comprehensive health and life insurance, and access to both UN and commercial learning platforms. The programme links fellows to national skilling schemes such as PMKVY 4.0, NAPS, and PM Viksit Bharat Rozgar Yojana.

The first batch of 16 fellows will be selected through a competitive process and placed with UN agencies at various administrative levels.

Adi Karmayogi Volunteers - Grassroots Catalysts

The Adi Karmayogi Volunteers initiative, supported by the United Nations Population Fund (UNFPA), deploys tribal youth as grassroots change agents. Eighty-two volunteers are active across 82 blocks in 13 districts of Madhya Pradesh and Rajasthan.

Their roles include supporting Village Vision 2030 planning, conducting awareness campaigns, facilitating outreach, and improving access to government schemes. This effort strengthens community participation and inclusive governance at the village level.

Significance and Impact

The partnership between the Ministry of Tribal Affairs and the United Nations demonstrates a strong commitment to inclusive development. It aims to empower tribal youth as leaders, innovators, and agents of change.

The programmes encourage skills, mentorship, and opportunities for long-term career growth. They also ensure that tribal communities actively participate in their own development and governance. This initiative aligns with the Sustainable Development Goals and India's vision for a developed nation by 2047.

TOKAMAK-BHARAT (SST-BHARAT)

India is advancing its nuclear fusion research with a detailed plan to develop the Steady-state Superconducting Tokamak-Bharat (SST-Bharat). This fusion-fission hybrid reactor aims to generate 130 MW of power, with 100 MW from fission and 30 MW from fusion, targeting a power output five times the input. The project envisages commissioning a full-scale demonstration reactor by 2060 with an ambitious output-to-input ratio of 20 and a power output of 250 MW.

Fusion Power and Its Advantages

Fusion is the process where two light atomic nuclei combine to form a heavier nucleus, releasing vast energy. It powers stars and offers a cleaner alternative to nuclear fission. Fusion produces less radioactive waste, reducing storage and environmental concerns. However, fusion requires extreme conditions, such as temperatures exceeding 100 million degrees Celsius, to sustain reactions.

Fusion Technologies - Magnetic and Inertial Confinement

Two main methods exist to achieve fusion - inertial confinement and magnetic confinement. Inertial confinement uses powerful lasers to compress fuel capsules rapidly. Magnetic confinement, the approach India pursues, involves heating plasma and controlling it with magnetic fields inside a tokamak reactor.

India participates in the global ITER project, which focuses on magnetic confinement and aims to reach a power gain factor (Q) of 10.

India's Tokamak Progress and SST-Bharat

India's current tokamak, SST-1, can maintain plasma for up to 650 milliseconds, with a design target of 16 minutes. The SST-Bharat is planned as the next step, aiming for continuous and efficient fusion energy production.

The success of tokamaks depends on plasma confinement duration and stability, which directly impact energy output and reactor efficiency.



Innovations – Digital Twins and Machine Learning

Researchers propose using digital twins – virtual models of physical reactors – to simulate real-time plasma behaviour and optimise designs. Machine learning will assist plasma confinement and control.

Development of radiation-resistant materials is also a priority to enhance reactor longevity. These technologies are vital for overcoming technical challenges and reducing costs.

Global Fusion Landscape and India's Timeline

Internationally, fusion projects vary in timelines. The UK's STEP programme targets a prototype by 2040, and some US private firms aim for operational fusion plants in the 2030s.

China's EAST tokamak already holds plasma duration records. India's 2060 target is more cautious but focuses on steady progress through public funding and international partnerships.

Challenges – Economic Viability and Policy Priorities

Fusion power's economic feasibility remains unproven due to high research, construction, and operational costs. India's fusion programme faces competition from expanding renewable energy sources and existing nuclear fission plants.

Limited private sector involvement contrasts with global trends. Experts caution that fusion timelines are often optimistic and that affordable fusion power is not guaranteed soon.

Strategic and Scientific Benefits

Despite uncertainties, fusion research drives advances in superconducting magnets, plasma physics, and materials science. These innovations can boost India's technological autonomy and industrial capabilities. Collaborations with ITER and global entities may enhance expertise and accelerate progress in fusion energy and related fields.

INDIA'S CLEAN PLANT PROGRAM

India faces rising challenges from climate change and plant diseases that threaten agricultural productivity. Viruses and other pathogens cause severe crop losses, affecting farmers' income and food quality. To tackle this, the government launched the Clean Plant Programme (CPP) in August 2024. CPP aims to provide virus-free, high-quality planting material to farmers, ensuring healthier crops and higher yields.

Background and Need for Clean Planting Material

Plant diseases often go unnoticed until symptoms appear, making field management difficult. Using disease-free planting material is the most effective preventive step. It reduces the spread of systemic pathogens, improves crop quality, and extends shelf life. The CPP focuses on clean plant stock to safeguard plant health without harmful side effects.



Programme Structure and Funding

CPP is implemented by the National Horticulture Board (NHB) with technical support from the Indian Council of Agricultural Research (ICAR). The total investment is ₹1,765.67 crore, including a \$98 million loan from the Asian Development Bank.

Nine Clean Plant Centres will be set up nationwide, with three centres in Maharashtra for grapes, oranges, and pomegranates. Modern nurseries will be financially supported to supply 8 crore disease-free seedlings annually.

Key Activities and Progress

The programme has launched a dedicated website to provide updates and resources. Hazard Analysis is underway to identify viruses in crops like grapes, apples, and citrus. Sample testing has been conducted across various states.

The first Clean Plant Centre is in the design phase. Experts from NHB and ADB have visited nurseries in Maharashtra and Jammu & Kashmir to study best practices. Laboratory assessments are ongoing to develop advanced bioinformatics tools for virus detection.

Process of Producing Clean Planting Material

Plant material is first tested for pathogens. If negative, it is propagated to produce disease-free mother plants.

If positive, virus elimination treatments like tissue culture or heat therapy are applied before propagation. Certified clean plants are then distributed through nurseries to farmers, ensuring quality and safety.

Benefits for Stakeholders

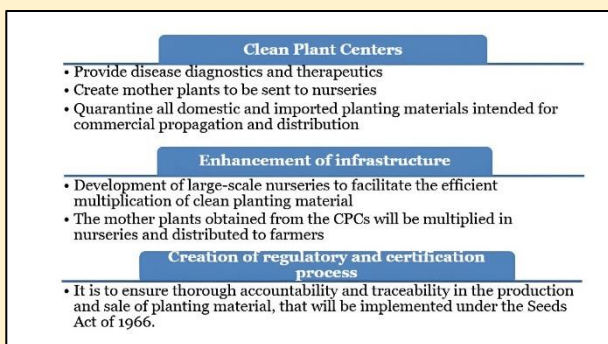
Farmers gain access to healthy, high-yield seedlings. Nurseries receive infrastructure support and streamlined certification. Consumers benefit from better quality fruits with improved taste and nutrition.

The export sector is strengthened by offering virus-free produce. The programme promotes equity by making clean planting materials affordable and includes women farmers in planning and training. It also develops region-specific varieties suited to diverse agro-climatic zones.

Alignment with National Initiatives

CPP supports India's Mission LiFE, which encourages environmental sustainability through behavioural change. It also complements the National One Health Mission, integrating human, animal, and environmental health to manage disease risks holistically.

CPP aligns with the Mission for Integrated Development of Horticulture (MIDH) to boost sector productivity and quality.





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